DOCUMENT RESUME

ED 363 726 CE 064 953

AUTHOR Hart-Landsberg, Sylvia; And Others
TITLE Learning the Ropes: The Social Construction of Work-Based Learning.
INSTITUTION National Center for Research in Vocational Education, Berkeley, CA.
SPONS AGENCY Office of Vocational and Adult Education (ED), Washington, DC.
PUB DATE Dec 92
CONTRACT V051A80004-92A
NOTE 94p.
AVAILABLE FROM NCRVE Materials Distribution Service, 46 Horrabin Hall, Western Illinois University, Macomb, IL 61455 (order no. MDS-413: $6).
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS *Adjustment (to Environment); *Education Work Relationship; Entry Workers; *Hospital Personnel; Interviews; *On the Job Training; Pilot Projects; *Secretaries; Vocational Education; *Work Environment

ABSTRACT

A study examined how experienced and newly hired hospital unit secretaries at a large private hospital "learned the ropes" of their jobs. Two researchers interviewed and observed a total of 15 unit secretaries to gather information on the secretaries' occupational and educational backgrounds, assigned tasks, and ways of learning their assigned tasks. The experienced secretaries' reflection-in-action on their activity system was compared to that of a novice secretary. For the secretaries, learning the job turned out to be a major part of the job itself, and their learning and doing proved largely concurrent. A large part of the secretaries' "learning the ropes" entailed learning their respective activity systems through a process of reflection-in-action that was largely self-initiated and that involved ongoing interpretation and negotiation of their activity systems. The secretaries perceived themselves as constantly engaged in learning but seldom being taught. The following implications for training designers were drawn: recognize the essential role of assisted learning, create conditions to foster assisted learning, design and implement innovations that structure learning in the workplace, and design and implement innovations that structure occupational learning in schools. (A hospital job description and interview guide are appended, and 68 references are included.) (MN)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED 363 726

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

LEARNING THE ROPES: THE SOCIAL CONSTRUCTION OF WORK-BASED LEARNING

Sylvia Hart-Landsberg
Jane Braunger
Stephen Reder

Northwest Regional Educational Laboratory

Mary M. Cross

University of California at Berkeley

National Center for Research in Vocational Education
Graduate School of Education
University of California at Berkeley
1995 University Avenue, Suite 375
Berkeley, CA 94704

Supported by
The Office of Vocational and Adult Education,
U.S. Department of Education

December, 1992

MDS-413

CE 064 953

FUNDING INFORMATION

Project Title:	National Center for Research in Vocational Education
Grant Number:	V051A80004-92A
Act under which Funds Administered:	Carl D. Perkins Vocational Education Act P. L. 98-524
Source of Grant:	Office of Vocational and Adult Education U.S. Department of Education Washington, DC 20202
Grantee:	The Regents of the University of California National Center for Research in Vocational Education 1995 University Avenue, Suite 375 Berkeley, CA 94704
Director:	Charles S. Benson
Percent of Total Grant Financed by Federal Money:	100%
Dollar Amount of Federal Funds for Grant:	$5,775,376

Disclaimer:

This publication was prepared pursuant to a grant with the Office of Vocational and Adult Education, U.S. Department of Education. Grantees undertaking such projects under government sponsorship are encouraged to express freely their judgement in professional and technical matters. Points of view of opinions do not, therefore, necessarily represent official U.S. Department of Education position or policy.

Discrimination:

Title VI of the Civil Rights Act of 1964 states: "No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance." Title IX of the Education Amendments of 1972 states: "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance." Therefore, the National Center for Research in Vocational Education project, like every program or activity receiving financial assistance from the U.S. Department of Education, must be operated in compliance with these laws.

ACKNOWLEDGMENTS

We would like to acknowledge the work and insight of those who contributed to our understanding of the ways unit secretaries learn the ropes of their jobs. The many hours Charline Poirier spent informing herself, through reading and interviews with a variety of types of office workers, about the issues involved in clerical vocations and clarifying them in long, enlightening discussions with us were a great benefit to the research. We credit Ardys Dunn with informing us about hospitals as settings for office work. To the hospital administrators who enabled us to carry out our work in such a setting, we also owe thanks. The unit managers in particular were gracious in granting our requests for the time and attention of the secretaries—the very resources that the research findings demonstrate to be so valuable. We especially appreciate all the secretaries' careful consideration of the complex questions we raised about their learning and the patience of those four who put up with us during the observations. It is the secretaries' active stance toward the research that infused it with its value.

This publication is available from the:

National Center for Research in Vocational Education
Materials Distribution Service
Western Illinois University
46 Horrabin Hall
Macomb, IL 61455

800-637-7652 (Toll Free)

TABLE OF CONTENTS

Introduction 1
- Restructuring of Education and Work 1
- Importance of Work-Based Learning 2
- Some Key Issues in Work-Based Learning 3
- The Relevance of Activity Theory for Work-Based Learning 7
- Activity-Theoretic Approaches to Work-Based Learning 11
- Learning the Ropes: A New Approach to Work-Based Learning 13
- A Pilot Study 14

Research Methods 15
- Research Design 15
- The Ethnographic Approach 16
- Research Activities 17
- Data Analysis 21

The Secretaries' Work 22
- The Secretaries 22
- The Assigned Tasks 24
- Learning the Assigned Tasks 30

Experienced Secretaries' Reflection-in-Action on the Activity System 34
- Organizing the Workload 34
- Relating to People 44
- Learning the Organization of the Unit and Hospital 46
- Forming a Concept of Self in Relation to the Work and the Organization 49

A Novice's Reflection-in-Action on the Activity System 54
- The Object 55
- The Community and Division of Labor 56
- The Rules 57
- The Subject 58
- The Tools 59
- The Resolution 62

Conclusions 63
- Learning and Doing 63
- Reflection-in-Action in the Activity System 64
- Supported and Unsupported Learning in the Activity System 66

Implications 67
- Recognize the Essential Role of Assisted Learning 68
- Create Conditions to Foster Assisted Learning 69
- Design and Implement Innovations That Structure Learning in the Workplace ... 71
- Design and Implement Innovations That Structure Occupational Learning in Schools 72

References 75

Appendix A: Hospital Job Description 83

Appendix B: Interview Guide 89

INTRODUCTION

Restructuring of Education and Work

Several large scale trends underlie calls for change in the organization of workplaces and in the education and training of workers in the United States. Technological advances, growing international competition, and increasing demographic diversity in the workforce (particularly rising percentages of undereducated entry-level workers) are together driving recognition of the need for new models and policies for both industry and education (Secretary's Commission on Achieving Necessary Skills [SCANS], 1991, 1992).

This growing recognition is apparent in various ways. On one hand, companies across the country are increasingly experimenting with new approaches to creating high performance organizations. Strategies—such as total quality management, continuous improvement, self-managing teams, participatory design, and pay-for-knowledge—are being implemented that change the social organization of work and introduce new performance standards and compensation systems. These innovations, along with the introduction of new technologies, bring with them expanded demands for literacy and communication skills as well as more complex reasoning, problem-solving, and decision-making capabilities (SCANS, 1992; Stasz, McArthur, Lewis, & Ramsey, 1990).

Although education and training will undoubtedly be a vital part of such change-oriented efforts, recent research (Poirier, 1991; Reder, Hart-Landsberg, Schwab, & Wikelund, 1991; Stern, Iguchi, & Komazaki, 1992) suggests that this may constitute an incomplete strategy for bringing about the desired changes. The workplace environment itself must encourage and engage the targeted new skills and knowledge. In the areas of workplace literacy and creativity, for example, recent research indicates that not all types of work environments are conducive to the use (and thus the development) of creativity and literacy in problem-solving and other work activities (SCANS, 1991, 1992).

At the same time, many attempts to restructure or redesign the workplace do not carefully consider skill and training requirements. Such effort may also provide too narrow a basis for planning needed change. Too little thought is given to the need for orientation and training of workers regarding their uses of new technologies or participation in new organizational models.

Strategies based on restructuring only the education and training systems for workers or on restructuring only the technological and social organization of workplaces will likely be too narrow for bringing about desired changes. Reciprocal, coordinated efforts to design and implement new kinds of training and new kinds of work environments are essential to nurture more literate, creative, and skilled workforces and high-performance organizations. Vocational education and training must prepare workers to function effectively in the new environments; reciprocally, the new work environments must draw on, reinforce, and encourage the further development of the skills, knowledge, and behaviors addressed by education and training programs.

Importance of Work-Based Learning

There are both practical and theoretical reasons to expect successful strategies to include significant *work-based learning* components. At a practical level, much of the short-term future workforce is already out of school and on the job. Demographic projections about our future workforce and its educational characteristics (e.g., see Johnston & Packer, 1987) indicate a substantial need for worker training and education in the short-term future. According to future workforce projections, there will be increasing percentages of entering workers who will not have the basic skills and knowledge required for high-wage jobs (Commission on the Skills of the American Workforce, 1990). If workers and companies are to remain competitive, such analyses conclude, significant investments in work-based education and training will likely be required.

There are reasons to anticipate increasing theoretical attention to work-based learning as well. The success of efforts to coordinate workplace and educational restructuring may well require new and more broadly based theories about the relationship among education, training, and work. Theoretical frameworks are needed that can specify a rich array of potential relationships among educative and work processes, an array in which both current and alternative future states of these interrelationships can be clearly specified. If we can contrast alternative relationships among educative and work activities in this way, then we can begin to envision and bring about processes of change that may lead from the current state to desired future states.

Contemporary research by and large does not yet offer a coherent framework in which such change can be systematically considered. A fundamental problem has been the

limiting assumptions often tacitly made about how teaching, learning, and work activities are related. Because research on teaching and learning generally has been limited to school environments and school-like tasks, theories of both human development and education have been based on a view of learning as separate from (doing) work. While such assumptions have been useful for understanding formal education, they become more problematic for the analysis of the relationship between educative and productive processes in the workplace.

Some Key Issues in Work-Based Learning

This growing practical and theoretical interest in work-based learning is creating the need for a systematic research and development agenda in this area. Although it would be premature to outline such an agenda in detail, several key issues can be identified: (1) *distinguishing learning from doing* in workplace settings, (2) *specifying developmental relationships between affective* (e.g., attitudes, motivations, dispositions to learn/perform a task) *and cognitive components of work-based learning*, (3) *identifying the social organization of expertise* in workplaces, and (4) understanding the *relationship between individual learning and organizational development*. Each of these is briefly outlined below.

Distinguishing Learning from Doing in Workplace Settings

When teaching and learning activities are investigated in nonschool settings such as workplaces, it becomes quite clear that educative and work processes are tightly interwoven and difficult to disentangle (Hart-Landsberg & Reder, 1992; Scribner & Sachs, 1990, 1991). Prevailing theories of development and learning, closely associated with school settings in which such processes have been assumed to be separate, have thus limited applicability to work-based learning. Furthermore, there is growing evidence that school-based learning differs in fundamental ways from thinking and learning in practical settings. Lave and Wenger (1991) have suggested that *situated learning* in workplaces and other nonschool settings has quite distinct characteristics from the learning that accompanies formal, school-like instruction.

This perspective is advancing among both educational researchers such as Resnick (1987) and Berryman (1987) as well as among developmental theorists such as Scribner (1984) and Wertsch (1985). These and other scholars argue that the role of formal

schooling in the development of human capabilities needs to be carefully reconsidered. As these issues are reexamined, questions about the more particular concerns of how school-based and work-based learning are related to workforce development can be systematically explored.

Specifying Developmental Relationships Between Affective and Cognitive Components of Work-Based Learning

Most calls for restructuring education for the workplace have emphasized the importance of what have been variously described and categorized as "generic skills" as opposed to job-specific skills and knowledge. SCANS (1991, 1992), for example, identified the generic "workplace know-how" as consisting of two key parts: (1) skills competencies (in five areas—resources, interpersonal skills, information, systems, and technology) and (2) foundation skills (basic skills; thinking skills; and personal qualities such as self-esteem, self-management, and sociability). In another in-depth study, *Teaching and Learning Generic Skills for the Workplace*, Stasz et al. (1990) suggest two general categories of generic skills: basic or enabling skills and complex reasoning skills. In addition, the authors found certain critical dispositions essential for effective work (e.g., the ability to make decisions, the willingness to take responsibility for the consequences of one's decisions, and cooperative skills). They note that both vocational teachers and workers perceive these dispositions to be as important if not more important than other kinds of "generic skills."

Looking at these formulations of generic skills (and others that could be cited), one notices that each includes affective elements not usually considered as "skills" or "knowledge" needed for the workplace. In the SCANS model, these affective entities are dubbed "personal qualities"; whereas, in the Stasz et al. framework, they are classified as "dispositions." Regardless of how they are glossed, a major issue for both theory and practice concerns the relationship between the "skill" and the "affective" components in terms of how they intertwine in development and use in the workplace. Stasz et al. note the components' interdependence in the learning process and call for additional theory and research on the matter. Laufer (in press) similarly notes a key issue for workplace development is understanding how to include "motivation" in theoretical accounts of learners' transitions from novice to expert workers.

Identifying the Social Organization of Expertise in Workplaces

Another crucial issue for both theory and practice concerns how the entire construct of workplace expertise is framed. Varying approaches to the analysis of expertise (skills and knowledge) have commonly understood expertise as a property of the *individual*. Though there have been broad variations among theories as to whether various kinds of knowledge are explicit or tacit and generally available or whether they are situation-specific, the unabiding common assumption has been that the repository of all such expertise is "inside" the individual. This traditional outlook, frequently termed Cartesian or rationalist, has had very strong ramifications for both education and the social organization of work.

Though still the dominant approach in both educational and organizational theory and practice, the Cartesian approach has recently been challenged by researchers who have looked closely at how individuals and small groups accomplish work tasks. Hutchins (1987) studied how ship crews accomplish complex navigational tasks; Engestrom (1992) has analyzed the teamwork of judicial workers in courtrooms and of medical teams providing clinical services; Shaiken (in press) has examined the collective nature of skills among automobile factory workers; Hutchins and Klausen (in press) have investigated "distributed cognition" in airplane flight crews; Heath and Luff (in press) studied the collaborative control of the London Underground system. Each study persuasively analyzes observed workplace expertise in non-Cartesian terms: Expertise is socially distributed among workers, jointly constructed in close articulation with features of the work activity and environment.

These provocative findings about the essentially distributed nature of (at least some kinds of) workplace expertise is complemented by parallel findings about the nature of human capabilities in other practical settings. Jean Lave (1988; Lave & Wenger, 1991), for example, has studied the use of mathematical skills and knowledge in a variety of nonschool tasks and settings (e.g., in the craftwork of tailors, in the comparative supermarket shopping of consumers, and in the caloric calculations and reckonings of dieters). She comes to much the same conclusion as the workplace researchers about how people learn and use various cognitive capabilities in everyday life:

> There is reason to suspect that what we call cognition is in fact a complex social phenomenon. The point is not so much that arrangements of knowledge in the head correspond in a complicated way to the social world outside the head, but that they are socially organized in such a fashion as to be indivisible. "Cognition" observed in everyday practices is distributed—stretched over, not divided among—mind, body, activity and culturally

organized settings (which include other actors). (Lave & Wenger, 1991, p. 79)

Understanding the Relationship Between Individual Learning and Organizational Development

The growing interest in various organizational reforms such as self-managing teams and high performance organizational models raises interesting theoretical and practical questions about how such organizational development may be related to individual workers' learning and development. In the absence of useful theoretical frameworks, the default relationship seems to have been that management makes decisions about organizational change and innovation, then line workers are trained to "fit into" the new arrangements. But empirical studies of organizational change and development suggests that other, more systemic processes of change may be at work as well (Engestrom, 1991, 1992).

Systemic views of organizational activity often adopt a dynamic view of critical events in an organization's history, events closely linked with evolution and change within the organization. Contradictions and conflicts among various subsystems or elements of organizational functioning lead to events variously classified as disturbances, breakdowns, accidents, and so forth (Reason, 1990). Analyses of such events as catastrophic accidents often reveal both *active errors* (e.g., human operator errors) that may be the proximal cause of a critical event as well as *latent errors* that may lie dormant for considerable periods of time yet be the root cause of an emergency, accident, or breakdown. Whereas active errors are often thought to reflect the lack of critical skills or knowledge in front-line workers (against which additional training, skill, and knowledge is offered as a remedy), latent errors are generally attributed to problematic managerial policies or processes.

Some recent research suggests that there may be interesting empirical connections between these two types of errors or problems. Norros (in press) studied the flexible manufacturing processes of tooth gear production in Finland. Norros found that disturbances in the production system frequently became contexts for operators to further develop their expertise. Others have suggested that such disturbances and breakdowns may generally be important contexts for work-based learning (Engestrom, 1992; Winograd & Flores, 1986). Further research in this area carries the promise of new approaches to designing work-based learning and organizational development.

The Relevance of Activity Theory for Work-Based Learning

The issues and agenda sketched above regarding work-based learning call for a broad theoretical framework. The framework of *activity theory* should prove quite useful in this regard. An outgrowth of the work of the Soviet psychologist Vygotsky (1962, 1978, 1988), cultural-historical activity theory takes "human activity" as the basic unit of analysis for the understanding of behavior and mind (Leont'ev 1978, 1981; Wertsch, 1981). Behavioral and cognitive processes are assumed to be embedded in activities that serve particular motives. An *activity* itself (e.g., housecleaning) has cultural and historical primacy and continuity, though it can be analyzed on both the individual and societal planes. At one level of analysis, individuals acquire knowledge, skills, and motives through participation in socially organized activities; at the societal level of analysis, socially organized activities are reproduced and transformed through the actions of individual participants. A brief overview of activity theory relevant to the present study is presented below; the interested reader is referred to Leont'ev (1978, 1981), Wertsch (1985), Kozulin (1986), and Engestrom (1991, 1992) for more in-depth treatment of the theory.

Elements of an Activity System

The analytical primacy of the cultural-historical activity is embodied by the concept of an *activity system*. The activity system is no less important as context for individual and group action than are the physical setting, the participants, and other material aspects of context. An activity system is comprised of a number of basic elements, including a given practitioner or *subject*, the *object* or motive of the activity, its *mediating artifacts* (e.g., tools, signs, and symbols), the *rules* generally followed in carrying out the activity, the *community* of coworkers and colleagues involved in the activity, and the *division of labor* within the activity. Figure 1 shows these elements of an activity system in a pyramid-like diagram which is increasingly used among activity theorists.

Figure 1

The Structure of Unit Secretaries' Activities

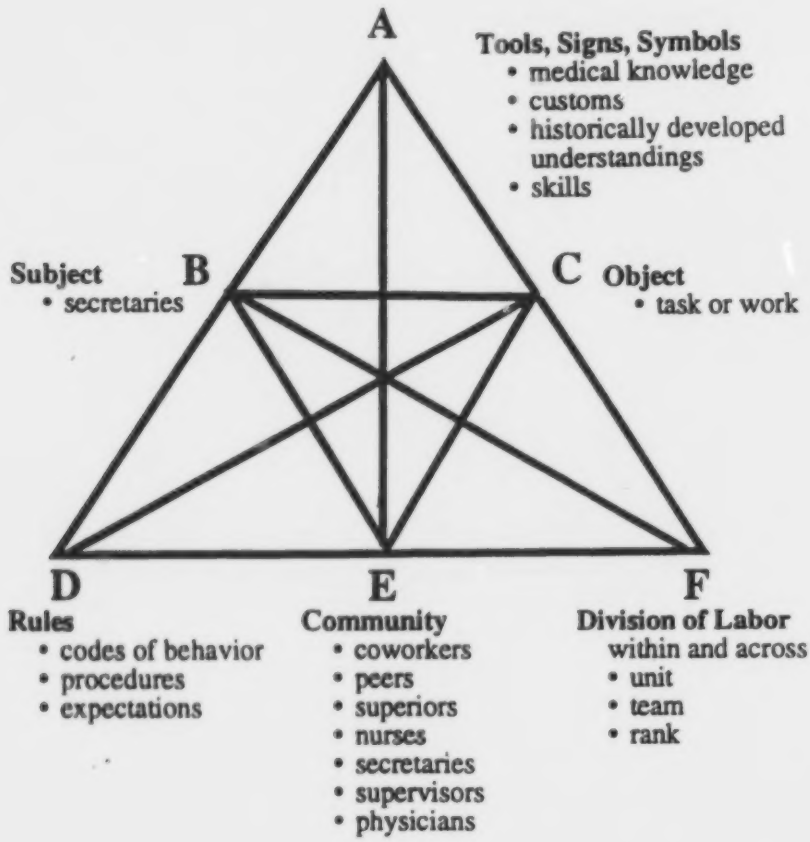


Figure 1 diagrams an activity system for the medical unit secretaries whose work is studied in detail in this project. Since such diagrams will be used repeatedly below in empirical analyses of their work activities, it may be useful now to review the components of the activity system pyramid.

The Object of an Activity System

The central or organizing element in an activity system is its object or motive, the cultural goal that the activity advances. In the health care industry, for example, some activity systems might have the provision of high-quality health care as their object; other activity systems might be organized around cost-effectiveness objects. An important point to remember about activity systems is that their objects are *socially constructed* by their participants (subject and community). Stated goals or policies governing activities,

including applicable *rules* or *mediating documents* may well influence the goal- or object-formation process, but it is the socially constructed object that is central to the activity system. Such social construction, of course, is recurrent and ongoing and subject to change (along with other elements of an activity system) over time. For example, the divestiture of AT&T and gradual deregulation of the telecommunications industry in the United States are bringing about fundamental changes in the ways in which the industry (and its constituent activity systems) operate. Whereas many activity systems within the "phone company" once had the goal of supporting the provision of "universal service" to all households under conditions of a regulated monopoly, the transition into a competitive, market-driven environment is accompanied by parallel transformations of the activity systems' objects. Similar transformations are taking place within the health care industry as global, systemic change continues to take place in its technological, fiscal, and regulatory environments.

Mediation

The notion of *multiple mediation* is crucial in activity theory. Activity may be mediated by various elements in the activity system: tools, signs, and symbols (e.g., medical instruments, patient charts, medical knowledge, and customs and other historically developed understandings and meanings); by the rules of work (e.g., formal and informal codes of behavior in the hospital, implicit and explicit procedures for payment and insurance reimbursement, and shared expectations of how various tasks are to be accomplished); and by particular divisions of labor in effect (e.g., the medical unit team, consisting of unit secretary, nurses, physicians, paraprofessionals, and other hospital staff).

Multivoicedness

Expertise in any field is generally an ongoing dialogue among multiple viewpoints—partially complementary, partially conflicting. Sometimes these multiple "voices" are closely allied with distinct roles within activity systems in a setting—for example, the distinct voices and historically developed outlooks of nurse, doctor, patient, unit secretary, and hospital administrator. As Engestrom (1992) notes, these varied voices represent distinct "social languages" and ways of understanding one's workplace experience, each rooted in its own social position, value system, and culturally developed traditions of practice. In addition, the activity systems around these multivoiced subjects may contain historically distinct "layers" of tradition and practice, each with its own

characteristic viewpoint and mediating instruments, rules, and divisions of labor. Although multivoicedness is often associated with multiple individuals in a given setting, it is important to emphasize that given individuals may participate in an activity system with multiple voices. A medical team member in one instance, for example, may speak (or act) with the voice of a professional doctor; in another context, with that of a hospital employee; and in yet another with that of a late twentieth century American woman.

Networks of Activity Systems

Activity systems rarely exist in isolation within a given setting. In general, the varied objects, mediating instrumentalities, and subjects and rules within a setting are best represented as a network of partially overlapping and linked activity systems. Engestrom (1992) details a number of examples of the different ways in which "neighboring" activity systems can be linked. They may be linked through a common object of activity, as when two activity systems in a hospital setting share the common purpose of providing quality medical care to a patient. Or neighboring activity systems may be linked through overlapping subjects—that is, when given workers participate in multiple activity systems. Linkage between activity systems may also reflect shared instruments, systems of representation, and other mediating devices. Scribner's (1984) study of the relationship between different jobs in a dairy, linked through shared mediating documents that specify product "orders," illustrates the power of activity theory for illuminating such relationships. Examples of these and other types of linkages among activity systems in a hospital work setting will be noted in the study described below.

Dynamic Nature of Activity Systems

Another crucial feature of an activity system is its dynamic nature: It is subject to perturbations, disturbances, and change over time in response to changes in its external environment as well as to conflicts that arise in its inner workings. Engestrom (1992) describes a number of different types of conflicts that may exist within an activity system, any one of which can help generate disturbances in the system over time. Engestrom provides an example of one type of inner conflict within an activity system relevant to the medical setting studied in this project: the conflict between the exchange value of a medical tool (e.g., a drug) and its use value in practice. Physicians may well encounter conflict between the applicability/utility of a drug and its cost, thus generating conflicting goals (i.e., providing quality care versus saving money) and disturbances within the activity

system. Other sources of conflict and disturbance may be related to conflicts among tools, voices in a multivoiced system, neighboring activity systems, and so forth.

Regardless of their genesis, such disturbances manifest themselves as contradictions, tensions, discoordinations, ruptures (of understanding), and dilemmas in everyday discourse and practice. Much practical action in the workplace is directed towards coping with and adjusting to these disturbances, which are theoretically intrinsic to a cultural-historical activity system, reflecting deep-seated contradictions within the activity system. The repetitive disturbances occurring in the day-to-day operation of an activity system in turn trigger experimentation, new ways of understanding and accomplishing goals, new forms of mediating devices and divisions of labor, new rules and expectations for doing things, and so forth. Many of these innovations, of course, are collectively accomplished and lead to long-term qualitative changes in the activity system that at least temporarily resolve its underlying conflicts and contradictions.

Activity-Theoretic Approaches to Work-Based Learning

Two major approaches to work-based learning have been formulated with activity theory. One approach is closely allied to the dynamical view of activity systems described in the preceding section. It considers learning as part of a collective long-term process of change and development within an activity system. A second approach looks specifically at teaching and learning in the workplace as an activity systems itself, potentially distinct from the activity systems of work. Each of these approaches is discussed briefly below.

Learning as a Dynamic Process in Activity Systems

The developmental work research of Engestrom and colleagues (1991, 1992) represents one major activity-theoretic approach to work-based learning. In tracing the historical development of an activity system, these theorists attend to the disturbances produced by contradictions and conflicts within the activity system. Various individual and collective attempts to repair problems, introduce innovations, and transform practice are seen as learning activities. In this view,

> qualitative changes in the activity involve resolutions of the contradictions, leading to the formulation of novel ones. . . . They often lead to the local expansive construction of new artifacts and new models of shared practice. . . . The history of an activity system may be understood as

> successive cycles of such reorganization and learning. (Engestrom, 1991, p. 80)

Engestrom (1992) has identified two ongoing, parallel components of learning in the "developmental cycle" of an activity system, *internalization* and *externalization*:

> a developmental cycle of expert activity begins with almost exclusive emphasis on internalization, on socializing and on training the novices to become competent members of the activity as it is routinely carried out. Creative externalization occurs first in the form of discrete individual deviations and innovations. As the disruptions and contradictions of the activity become more demanding, internalization takes increasingly the form of critical self-reflection, and externalization, [the] search for novel solutions, increases. Externalization reaches its peak when a new model for the activity is envisioned, designed and implemented. As the new model becomes consolidated, internalization of its inherent ways and means again becomes the dominant form of learning and development. (p. 16)

Two points should be emphasized here. First, two major categories of learning are intertwined in the normal course of development in an activity system. One of these, internalization, refers to what is often seen as the traditional purpose of vocational and occupational education—that is, socializing and training novices to become competent practitioners; the other form, creative externalization, appears closely related to what proponents of reform in vocational education term "higher order thinking skills," "creative problem-solving," and the like. Activity theory offers a theoretical means for tying them to each other and to the broader processes of organizational change and development within workplaces.

A second important point here concerns the central role of *critical self-reflection* in Engestrom's account of learning within the development of an activity system. As disturbances and contradictions within the everyday functioning of an activity system become increasingly apparent, practitioners increasingly reflect on the nature and organization of their activities, considering alternatives, deviating from established patterns, and trying out new ways of doing things. Schon (1983) has studied what he has termed "reflection-in-action" among numerous professional groups. Most notably Schon has studied this "capacity for reflection on knowing in the midst of action" (p. viii). In contrast to what he terms "technical rationality," in which theory is first generally acquired and then specifically applied, Schon posits reflection-in-action, a dynamic, ongoing conversation between thought and action, as a model for professional knowledge.

Schon's conception of reflection-in-action as a model of occupational knowledge is set against the prevailing idea that one learns and then one does; it affirms a dynamic between reflection and practice, and—quite importantly for the work under study here—implies that workers do have a theory about their work that is accessible to research. According to Engestrom's framework, such critical reflection is an essential bridge between the two kinds of learning processes underlying the ongoing development of an activity system.

Learning as an Activity System

Another activity-theoretic approach to work-based learning was taken by Scribner and Sachs (1990) in their study of on-the-job training in a factory stockroom. Scribner and Sachs examined the learning and doing of the job as separate activity systems in their own right. They took an analytical stance towards the relationship between the two types of activity systems, posing empirical questions about the ways in which they are related. They found that informally organized training and learning pervades the pattern of activity within this workplace. Embedded within collaborative problem-solving activities in the stockroom are opportunistic events whose motivation is on-the-job training, confirming the utility of seeing at least certain kinds of work-based education as separate activity systems. They found such educative processes to be effective for a diverse array of tasks and diverse set of workers and found them capable of addressing changes accompanying the introduction of new workplace technologies, at least for an "initial" level of competence.

Learning the Ropes: A New Approach to Work-Based Learning

In investigating the differences between learning in workplaces and learning in schools, it is important not to consider all work-based learning as a single category, comprised of a single type of learning process. It is essential to distinguish among various types of educative processes that may occur in the workplace. At least two kinds of workplace learning processes have been explored thus far. Recent advances in cognitive science and educational research have prompted considerable interest in *apprenticeship learning* (see Collins, Brown, & Newman, 1989; Resnick, 1987). Yet, as Scribner and Sachs (1990) point out, apprenticeship-like learning is not nearly as prevalent in or applicable to business and industry as the broad interest in it might suggest:

> A fundamental characteristic of apprenticeship is that it takes the form of a master-learner or mentor-learner relationship that tends to occur in crafts and

> professions. . . . The master typically manages and trains, and also exercises considerable control over the apprentice's work experiences. In a wide range of industrial salaried and technical jobs, however, these conditions do not attain. For one thing, expertise in complex work environments is distributed over a number of people . . . and no one person can serve as the master. . . . Novice workers/learners must come to understand the organization as a whole, comprehend the portion of overall production that their work involves, and negotiate the politics of the workplace at the same time as they master the particular tasks of their jobs. (p. 3)

Scribner and Sachs went on to investigate a second type of learning in the workplace, *on-the-job training*, by which they meant a broad range of processes through which workers are "broken into" new jobs through what D'Andrade (1981) has termed *guided practice*.

In addition to apprenticeship learning and on-the-job training, there are other important types of learning processes in the workplace. Another type is suggested by the term so often heard in informal conversations about learning a new job: "learning the ropes." In conversations we have heard among workers in many settings, the lore of learning the ropes involves a type of learning that is accomplished without benefit of either the master-learner format of apprenticeship learning or the guided practice characteristic of on-the-job training. Learning the ropes seems to be a work-based learning process that is accomplished through other means. The lay sense of the term seems to encompass "figuring out how things work" in an organization, learning to whom one goes for help in dealing with various kinds of problems that arise, learning how to collaborate with others in ways that are consonant with the prevailing "organizational culture," and so forth. The general sense seems to be that learning the ropes is essential for success and takes time for workers to accomplish, yet is very poorly understood.

A Pilot Study

To understand learning the ropes as a type of work-based learning requires investigating both the nature and content of "the ropes" that experienced workers have learned as well as the means through which new workers learn those "ropes" over time. A thorough research agenda would thus explore, over a range of occupations and settings, the nature of the knowledge comprising the ropes. One frame in which to investigate such knowledge might be a cross section, in which contrasts are drawn between the knowledge of experienced and recently hired workers within a job. Once the nature and structure of the knowledge that accrues with experience has been clarified through such analyses, a

second step would be to conduct longitudinal studies of new workers over time, tracking how they acquire the ropes knowledge and how their acquisition is impacted by literacy, communication, and job-related skills.

With limited time and resources to conduct a pilot study, the present project focused on only a portion of the first step mentioned above: an exploratory study of the nature of the ropes knowledge among experienced and recently hired workers in a given occupation and setting. An occupational group and setting was selected for the pilot study which the research team had reason to believe was characterized by considerable "learning the ropes": medical unit secretaries in a large private hospital.

RESEARCH METHODS

Research Design

The aim of the research was to contribute to the fields of vocational education and workplace organization a comprehensive view of the kinds of knowledge workers develop as they adapt to their jobs and the ways they acquire this knowledge. In order to formulate this "big picture," the research design included data collection (by means of observation, interviews, and document collection) on the activities and perspectives of secretaries.

Also, in the interest of developing a wide-angle view of learning in context, rather than a narrower focus on sets of discrete skills, the design incorporated data collection on both inexperienced secretaries and experienced secretaries. In order to see the differences between the knowledge of novices and that of experienced secretaries and to study the learning process of the novices, two groups of secretaries were sought, one with a great deal of experience and one with little experience. However, as the research team became familiar with the research setting and subjects, the idea of an exclusive disjunction between experience and lack of experience gave way to the recognition that the secretaries' experience is better represented as a variety of capabilities and understandings, each of which could be placed on a continuum. As a result, the research, while still encompassing a wide range of experience among its subjects, no longer cast the subjects into two groups on the basis of amount of experience.

This transformed view, acknowledging the complexity of the differences in amounts and kinds of experience, laid the foundation for the analysis of the essential on-the-job learning. It suggested that experience is not merely a consequence of having lived through certain periods of time while engaged in certain activities (including the acquisition of certain discrete skills) but results also from a kind of processing of one's activities (by thinking and feeling about them, expressing these thoughts and feelings, and selecting and trying out new activities). Moreover, this view of experience suggested that education and workplace organization affect the ways workers "process" their learning and work activities and thus have great potential for framing positive, productive experience.

The Ethnographic Approach

The ethnographic approach is well-suited to the pursuit of understanding the learning experience in the workplace. A guiding principle of this approach is that in order to understand human behavior it is necessary to take the actors' *meanings* into account. A closely linked principle is that a given behavior and its meanings are most clearly understood in the light of their relationships to the *contexts* in which they occur. This kind of research enterprise requires attention to the intricate detail of the many interlocking systems in which the subjects participate and therefore calls for data collecting activities which emphasize naturally occurring behavior, pay attention to actors' meanings, and admit to view a wide range of contexts with bearing on the behavior under study. The researcher's stance is usually relatively close to the informants—sometimes physically close as he or she joins in their activities or views them from as close a range as possible and, more importantly, intellectually and emotionally close as he or she attempts to study their points of view. The data and interpretation to which this approach can lead has been called "thick description" (Geertz, 1977) in recognition of their richness. In line with this research tradition, the research activities for this study were designed to generate the proximity to and rapport with the informants that would produce a comprehensive view of the complexity of their behavior and its meanings.

With its emphasis on systems of behavior and meaning, ethnographic research has particular merit in fields in which application of theory to critical situations is a goal. One such field which has employed ethnographic approaches is education. This research on unit secretaries benefits from the influential contributions of ethnography to educational theory and practice (Cazden, 1983; Cazden, John, & Hymes, 1972; Gilmore, 1985; Heath,

1983; McDermott, 1974; Ogbu, 1974; Spindler, 1974, 1982; Spindler & Spindler, 1987; Wolcott, 1978, 1983). Ethnographers in the field of adult education have shed light on the roles and meanings of education with reference to the contexts of learners' lives beyond the scenes of schooling (Fingeret, 1983a, 1983b, 1991; Gowen, 1990; Horsman, 1990; Merriam, 1989; Reder, 1987; Reder & Green, 1983; Rockhill, 1982, 1983; Wikelund, 1990; Wolcott, 1967; Ziegahn, 1992). Thus, the groundwork has been laid for contributing theoretical and practical answers to the issues of vocational education: Ethnographic fieldwork and analysis have proven to be effective tools for the discovery and explication of the kind of real-world complexity involved in learning for work.

Such tools enable us to trace the interplay between work environments and task performance which are the context of on-the-job learning. This contextualized study creates a detailed record of behavior and attitudes and their intersection in social systems. The resulting depiction has implications far beyond those which might have been obtained from a study based on data about skills abstracted from context. Such thorough understanding of workplace learning is necessary for designing training for new employees before and during the induction period as well as inservice training to support continual learning for those who have held their jobs longer.

Research Activities

The ethnographic tradition strongly influenced the selection and adaptation of observation, interviews, and document collection as the research activities. The findings, rather than proceeding as discrete outcomes from these separate activities, emerged from the research process as a whole. The research activities and the ways in which the research process yielded valuable insights are described below.

Gaining Entry

Before the research officially began, the process of gaining entry to the hospital as a research site proved to be highly informative about work there. The research team made its initial contact with the personnel department; the department's members provided data from personnel records on unit secretarial positions. The majority of unit secretaries had been in their current positions for several years or more. Even among the unit secretaries who had been hired within the last six months, all except one had previous experience in medical secretarial work, most in positions very similar to their current ones. These facts afforded

the research its first perspective on the extent of the secretaries' knowledge: One reason for the low turnover rate in unit secretarial jobs and in the profession as a whole is that a great deal of experience is required to learn it. The long learning period means that individuals are loathe to switch positions and careers, and institutions avoid hiring unit secretaries without a background of similar work experience (as well as formal training in medical secretarial work). In fact, most secretaries told the researchers that continual learning was an essential aspect of their jobs. In their early days in unit secretarial positions, they found the inadequacy of their knowledge of the hospital setting (essential for carrying out the work) very unpleasant and, therefore, did not readily seek new positions where they would need to repeat the adjustment.

In order to schedule the research activities, the research team was required to receive permission from the hospital research review board, the department overseeing unit secretary positions, and managers of the units in which the targeted secretaries worked. The employees involved in each step of the process helped to move it forward (e.g., by guiding the research team to petition for an exemption from the longer review process that is routine for research on patients). While not cumbersome or prohibitive, the process was relatively formal. This process informed the research about

- the outline and salience of the hospital authority structure;
- patient care and protection as the foremost concern of hospital work, including the secretaries' work; and
- time pressure on people at many levels of the organizational hierarchy.

The process of gaining access to the individual secretaries was quite different. While they too were open to the research, their time was at such a premium that it was very difficult for them to offer it. All but two of the secretaries whom the researchers sought out found time for an interview, but it was clear that the secretaries and their units were donating a considerable resource in allowing secretaries to leave their posts. (More details on the times and other conditions of the interviews are described later in this report.) Two secretaries postponed interviews several times until the researchers decided not to pursue them. One of these individuals could not find time on the job, had young children at home, and took college courses after work. The other was new in a busy unit where she and the unit secretary who worked the shift before hers felt that she could not be spared. The demands on these two workers, only slightly less than the demands on those whom the

researchers did succeed in interviewing, indicated unit secretaries' compact schedules. The challenge entailed in lining up interviews made it clear that the secretaries had

- relative *autonomy* to make decisions about their work;
- *critical functions*, rendering them nearly irreplaceable team members; and
- *dedication* to their work.

Interviews

The research team designated two members to undertake the fieldwork. One researcher interviewed eight secretaries, and the other interviewed seven. A four-page interview guide (see Appendix B) structured but did not dictate the subjects discussed. Each secretary was interviewed individually for about one hour. Attesting to the secretaries' autonomy (and commitment to the research), a few sessions ran well over one hour. At the same time, because of the heavy demands on unit secretaries, the interview conditions often were highly pressured. In order to find time to be interviewed, one secretary split the interview into two half-hour sessions on different days. One granted the interview during her lunch break, another before starting her job at 8:00 a.m. (although the hospital administration supported the research by allowing the secretaries to donate their work time). Most were able either to find a substitute (e.g., by asking the secretary on the next shift to come in one hour early) or to slip away during a "slow" time—for example, an evening when a storm decreased traffic to the hospital. (In one case, after the researcher had arrived for the interview, the secretary remained at her desk to complete a task she had been working on, to accept and complete a new task handed to her while the researcher waited, and to ask her coworkers whether they could handle specific tasks during her absence. Only then did she leave for the interview.)

Most of the interviews were held in a unit conference room where the secretary could be called back to the desk at a moment's notice if necessary. Others were held in a corner of an empty lobby because no extra room was available and the worksite itself was too noisy, or in the lunchroom because the secretary needed to eat lunch during the interview.

The interviews were tape-recorded. The researchers also took extensive notes to guard against loss of data as a result of noise in lobbies and the lunchroom and to record visual data (e.g., gestures and tone of voice).

Observations

The two field researchers each observed two secretaries working for one-half day each. They used a shadowing technique that they adapted from the research team's line of research (to which the present study belongs) on workplace communication and learning. For the purposes of this study, the technique was modified along the following lines: The researcher stayed close to the secretary being shadowed, watching over her shoulder as she worked at her desk or computer, listening to her end of phone conversations, reading her schedules and other materials, and accompanying her as she moved from one work station to another.

Although the researchers, in explaining these methods to the secretaries, emphasized that they intended only to observe and not to converse (in order to avoid disrupting the work), the four observed secretaries eagerly talked to the researcher during the observation. Each explained her tasks in terms of their purposes in the hospital system and their meanings to her personally, often encouraging the researcher's questions. These conversations usually occurred during relatively free intervals between tasks—during a walk to a distant department to pick up supplies or waiting for the computer to access a program, for example. At other times the secretary fit commentary between tasks, as when she had just completed a phone call and was swiveling her chair to face the computer. The secretaries' remarks most often were related directly to the research aim: understanding how they had learned or currently were learning the ropes of their jobs (or similar jobs they had held previously). Their open attitudes toward and comprehension of the research aims foreshadowed the findings by indicating that the secretaries (1) considered learning the ropes a significant challenge and (2) welcomed the opportunity for dialogue on learning the ropes because it is rare in the work setting.

The field researchers recorded their observations by taking extensive notes on the scene. They also collected documents pertaining to the observed activities—for example, handwritten notes and hospital charge forms.

Linkage Between Observational and Interview Data

The researchers expected a distinction between the kinds of knowledge gained from the two research activities—namely that observations, being present-oriented, would primarily reveal the ways the secretaries *did* their jobs and that interviews, being past-oriented, would emphasize how they *learned* them. Yet during the observations, the secretaries, even in the most cursory explanations of their tasks, frequently referred not

only to what they were doing and how they were going about it, but also to how they had learned or were learning it. The doing and the learning seemed to be ever-related in their minds. Similarly, in interviews, it became apparent that their learning was not an accomplishment of the past that they now know how to apply. Neither was it an ongoing side-effect of doing their jobs. Rather, to do secretarial work *is* to learn it and to acquire the requisite knowledge (especially of the hospital organization and how to operate within it) *is* the work of a secretary. This notion of linkage between learning and doing on the job emerged from the way *both* the observational and interview material accorded insight into the process of learning and doing on the job. The result of this transformation in the conceptualization of the learning/doing dichotomy was that the observations and interviews, while retained in the research design, were viewed as dual sources of data on both learning and doing.

Data Analysis

Data resulting from the activities described above was analyzed in several stages, each evolving from the insights gained in the previous stage. Members of the research team shared the transcriptions of the interview tapes and notes on observations and interviews as these were created. Their ongoing discussion of these materials allowed them to continually refine the questions and foci of the fieldwork on the basis of.concepts that were emerging from the data already collected.

The interview data was first analyzed and coded in terms of the common themes, challenges, tasks, and skills to which secretaries referred. This analysis resulted in the identification of underlying capabilities that pervaded all their activities. At this point, intensive discussion among the research staff led to insight into the impact of both workplace learning and settings on the secretaries' job performance. It became evident that *learning about the setting* was a constant occupational concern and that the setting might vary in the extent and way in which it supported such learning.

On the basis of this insight, the data was thoroughly analyzed for a second time; the secretaries' participation in and understanding of the unit and hospital activity systems were identified and analyzed. The complex relationships among their actions, ideas, and settings were examined as part of these systems. From the resulting depiction, episodes were selected for detailed analysis and diagrams.

THE SECRETARIES' WORK

The Secretaries

The Positions Held by the Secretaries

The secretaries who were the subject of the research served in units that varied greatly in their functions, sizes, and numbers of employees. Several secretaries were the lone secretaries in their units; others worked in teams of secretaries; a few "floated" as substitutes from one department to another. Many of the women studied have worked in several units in the same or different hospitals. The researchers encouraged the interviewees to talk about their experiences not only in their present positions but also in previous unit secretarial positions.

Occupational Background and Education

The hospital's description of the unit secretarial job (see Appendix A) lists the current education and experience requirements as

- satisfactory completion of unit secretary coursework or equivalent knowledge,
- knowledge of nursing unit clinical duties,
- familiarity with medical terminology, and
- computer skills.

The secretaries in this study have achieved these qualifications. In terms of formal training, most took courses in general secretarial skills, medical secretarial skills, and/or a medical field (e.g., nurses' aide training). Those who had formal training for medical secretarial work took courses in a community or private business college. (Most of the medical secretarial programs in the metropolitan area of the research do not train students specifically for unit secretarial work but focus on the wider category of medical secretary of which unit secretary is a subcategory.)

Many of the secretaries have education in fields other than their occupation. Three have B.A.s; one has an A.S. in a highly specialized scientific field. Another passed a community college course of study in a vocation she decided not to follow. Seven others have taken a wide variety of college courses, including art, sociology, and English.

In terms of related employment, the women average approximately twelve years of experience in medical work (as a secretary in a medical institution or in any other medical occupation—e.g., as a certified nurse assistant or as a secretary in a medical records office) and ten years of unit secretarial work. Eight of the women have held medical secretarial jobs for well over ten years. All eight spent most of these years in unit secretarial work.

Most of the women have experience working in fields that are neither medical nor secretarial, though for fewer years than they have spent in medical and/or secretarial work. These occupations include dancing, catering, truck driving, retailing, restaurant management, and running a family-owned computer business.

To convey the way the variables of education and occupational experience intersect in individuals' backgrounds, we describe two composite secretaries. Joanne is a composite figure created to represent those secretaries on the high end of the scales of education and experience relative to others in the group studied. After graduating from high school she enrolled in a community college to study a variety of subjects in the liberal arts and took several jobs for brief periods. She then enrolled in a medical secretarial course where she learned "medical terminology and life signs." She worked in a doctor's office for a year and then took a job as unit secretary in a hospital that assigned her to a cardiac recovery unit. Here she worked for several years until her husband was transferred and she moved to her present residence. After staying out of the job market for a few years while her children were young, she applied for a job as unit secretary at the hospital which was the site of this research. The hospital first hired her as a unit secretary float (so that she worked on nearly every ward of the hospital), then assigned her to the next available permanent position (on the obstetrics/gynecology ward). Later, at her own request, she was transferred to a cancer ward where she has remained for eight years.

Now we present a composite picture of a secretary which represents those in the research group on the low end of education and experience scales. This figure, Bella, has worked three years in her current position. She came to it after working in a different occupation for several years and retraining for general secretarial work in a six-month course. She graduated from high school but has not taken any college courses.

Only one informant, Anne, who is featured in a later section, differed markedly from both composites in terms of experience in unit secretarial work. She had been a unit secretary for only a few months. Although she had worked in another line of secretarial

work, she had never held a medical secretarial or other position in a hospital. One of the three courses which she had taken after high school was in medical terminology.

The Assigned Tasks

All the research subjects worked with medical professionals to serve patients who had been admitted to the hospital (some for less than a day, others for much longer) for medical procedures and/or observations. The secretaries' work was intense and multifaceted. They juggled many complex tasks and handled challenging situations. A dramatic finding of the research was that in addition to these duties, they shouldered another major responsibility: While doing the job, they continually had to learn the job. Although learning how to perform tasks as they occurred was an important part of this continual learning, another kind of learning—less obvious but equally weighty—was also necessary. The secretaries had to learn how to develop their underlying capabilities for getting their jobs done. This section describes the tasks, learning, and basic capabilities that form the unit secretarial job. The hospital's printed job description, reflecting some of the complexity of the occupation, expresses some of these as follows:

- Performing general clerical duties to support the nursing unit
- Transcribing physician orders in an accurate and timely manner
- Demonstrating effective communication skills and coordinates public relations
- Performing all duties in a manner that supports team concept, caring, and respect reflecting the philosophy of the department and hospital
- Upholding standards of confidentiality, attendance, and punctuality

Mental Demands

- Prioritizing work and managing time
- Communicating effectively with public and health care team
- Maintaining a caring and helpful attitude of service toward others, while working in an environment with many interruptions

Major Challenges

- Effectively maintaining a calm and caring demeanor in a milieu of constant change

- Accurately completing work in a timely manner with frequent interruptions

We now extend this job description on the basis of behavioral and interview data. The secretaries performed the clerical and receptionist tasks that are commonly seen in many institutions—entering and retrieving computer data, answering phones, filing, keeping schedules, and so on. Seeing their role as central to a unit's functions, they referred to themselves as the "hub" or "filter" of the unit, "a sponge," "a duck on a pond" (a phrase the speaker had heard applied to secretaries in a hospital inservice seminar); "the liaison between doctors, nurses, patients, and patients' families"; and the "communication center of the unit."

In this section, the secretaries' own words describe their main duties. It sometimes was difficult for them to list discrete duties. As one expressed it, "It's so hard to name different tasks because they're so intertwined." Although the quotes below emphasize specific duties, they also demonstrate this intertwining.

Communication

The secretary's reception duties, crucial for the unit, include "inputting the phones and the intercom and greeting people . . . being the communication center of the unit . . . *All the communication hospital-wide goes through the unit secretary* [emphasis added]." In order to process and disseminate information, the secretary must be a repository of facts not only about current happenings in her own unit but also about hospital procedures and organization. A secretary with twenty years of experience described this function and gave an example—learning multiple names for the same lab test:

> It's incredible how much knowledge a unit secretary really needs to know. *Because you are the hub, the nurses come to you for information. The doctors come to you for information. All other departments are coming to you for information and you are asked things that really you are not trained outside the hospital to know And so you have to be absorbing all this information all the time as a sponge. And it takes a good memory to retain it* [emphasis added] so that you can quickly answer someone's questions about this department: when they are open, when they are closed, maybe a test that is being performed. There's a lot of times that the doctor might [use a certain name to order a lab test] but that's not how it's ordered in the computer and you need to know the computer name for that test. [For] example, a doctor might write an order for T-4. He may give a verbal order

to a nurse for a T-4, which is a blood test. But, there are in the computer a free T-4, a total T-4, and the nurse may not know that. And so the secretary taking off the order then has to clarify the order, "What did the doctor actually want?" We may have to call the doctor back and ask them or initiate the nurse to call the doctor back to ask them.

Transcription of Doctors' Orders

One major task is to transcribe doctors' orders:

> When a doctor writes an order form on a patient, he writes it on a chart and that chart then comes to the unit secretary [for] initial steps to make sure that order is then taken care of . . . and *everything that would need to get the ball rolling is started with the unit secretary* [emphasis added]. Then it goes after that to the nurse to check. . . . What she's doing is checking the thoroughness of the secretary's work. . . . [An example would be] a diet for the patient. Patient is admitted and needs a general diet. Doctor would write [an order for] a general diet on the chart and the chart would come to the unit secretary. Then we would transcribe the order by ordering it from the kitchen via the computer and that would start the patient getting general trays from then [on]. . . . We have to take a quick glance at all the orders of the patient, which is [on] the cardex . . . open it up and quickly get a glance at what is most current on the patient. So it would list your activities and your diet and tests that are being done on your patient, treatments that are going to be done on your patient, so forth.
>
> Transcriptions are interspersed throughout the day: You can have a chart come back two, three, four times because there are more orders. You're just constantly processing them.

"Following Through"

It is not sufficient for the secretary simply to place orders; she must check to make sure that others have carried them out, as described below:

> First of all, taking [the orders] off the charts is easy enough because you can enter it in the computer and order it, then you get a printout of the order. *But then you also have to make sure that somebody shows up to draw blood [and that] the nurse knows the patient needs to get an x-ray. If there are meds that need to be given now you need to find a nurse so they know that* [emphasis added]. . . . You have eight or nine charts in front of you and some of them may be stuff that can be done tomorrow and some of them may be stuff that must be done within the next hour. *You kind of have to keep track and follow through* [emphasis added]. If I look up and the chart's still there or I haven't seen a lab tech come up, or I haven't seen the patient leave for x-ray, then I may start finding out where it stands—call x-ray: "When are they going to be here?" Find the nurse: "Did you get the meds yet?" Call lab—ask them when they're going to draw blood and things like that.

Keeping Records

The secretaries are required to use a variety of electronic and paper media for preserving information. One secretary described the recording she does:

> One of my tasks is to help out with the records from cases. They come first to Anne. Anne and I enter them. Then Anne goes through them. Then Katherine translates supplies into numerical codes. Then some go to Sherryl, who orders supplies. . . . The charge and . . . records come in together. They have to be updated—costs, procedures, personnel, times of each procedure, statistics extracted on a monthly basis, for example, room use. Frances is the one who is statistical. [She generates statistical reports from the information entered.]

Setting Priorities

The secretary repeatedly decides which of the many tasks before her have to be done first. The conflicting demands, time pressure, and urgent nature of the medical care lead to a position in which the secretary must quickly decide the sequence and manner of doing tasks, as in the following example:

> Which [of the doctors' orders] is more critical than the others? Is somebody going to die if I don't do this, like stat? [a hospital term meaning "immediately" and connoting urgency]. . . . [To make this decision I need] medical knowledge, and [I need to know] the urgency of the message because sometimes somebody will ask for something right away. You end up thinking, "Well, maybe that's not really what they want." *Then you kind of have to pry more information out of them to find out how urgent is this need* [emphasis added]. Because I'm telling another department maybe to drop everything and come flying. Now if they come flying and this message is not urgent, they're not going to come back at the nurse or anybody else. They come back at me. So, *I better make sure that the message that I'm delivering is right* [emphasis added]. Because maybe the doctor will order something stat, which means the other department, the lab, has to come out and draw blood from a patient. They drop everything that they have to come out to my floor to draw [blood from] this patient thinking [the situation is] life threatening. Well, the doctor may want it because . . . he has to go see another patient. Well, that's not a stat, that's "[urgent]" Within thirty minutes they'll come . . . because they dropped everything and maybe something else was [more] critical. . . . Generally, I'll ask the nurse, "What is going on? Why does [the doctor] want this?" Or I may ask him, depending on who the doctor is and how much information he's willing to give me. [Knowing whether to ask the nurse or the doctor] comes with working with the nurses. If the nurse is a float, she may not know as much as somebody [else] might know. So you kind of go with who you think is going to give you more information at the time [emphasis added]. Some doctors are more close mouthed and you're not going to get anything out of them. [Then you are] going to flip back to the progress notes and see who is asking for this. And it depends on what is going on at the desk too, how fast you're going to do that. And you've already heard in

> report what was going on with the patient, so you have some kind of an idea of what's going on.

Skill at setting priorities is crucial because the secretary is a member of a team of medical care providers: For the sake of the unit's workflow, she must organize her own tasks clearly. One emphasized the importance of this task:

> I'm a very organized person. And I feel that [is] really required to be a good secretary. It really requires somebody that almost takes organization to a fault. Almost takes being exact to a fault. *If you do not organize properly, your time can be so fast-paced you're gonna be buried* [emphasis added]. It takes a person that can handle several things at one time and not lose their cool.

Part of the challenge in setting priorities is to create a flow or rhythm for the tasks of the day:

> First I listen to report [a meeting of personnel at the beginning of a shift in which they listen to an account of the unit's status by personnel from the previous shift] in the morning and I try and figure out who's doing what and what's happening with each individual patient. If there's something going on, I kind of focus my attention that way all the time. I look and see who's on, nurse-wise. I look at the amount of discharges that I think are going to happen that day and the amount of patients I think are going to come in that day. I do something that a lot of the units don't do: I turn around and place patients in beds; whereas, in other units, the charge nurses do that. But, she oversees what I do. And I try to place patients where I think that they will be, so by the time I get out, I have some feeling of what's going to happen for the whole day. I know what kind of movement is going to happen that day. . . . Then I go out to the desk, and generally, there's about twenty charts sitting there waiting for me. [I look at] the board and kind of flip through the charts real fast to see what's going to happen. I try to get the real brief orders done real fast so I can get them out of the way and get going. Then [I] start doing some of the more complex orders and try to do those while I'm answering the phone and answering the patient call lights.

Detective Work

Having decided how to sequence her tasks, a secretary sometimes lacks information for completing one of them. Then she carries out an investigation to find the facts she needs. While looking at a charge sheet (itemized list of supplies for which a patient will be charged) with "missed charges" scrawled on it, one secretary described the kind of investigation that marks like this often prompt:

> Sometimes a nurse just writes something on a charge sheet—you have no idea what it is. You look up which nurse closed the room. You have to wait two days for her if she's off. For example, counts [of a certain supply]

might be off in one not written down a month ago. [*It's*] *detective work to find that out* [emphasis added]. I'm not sure which charges she's talking about.

Another secretary talked about the detective work for deciding whether to honor a patient's request:

> Patients' families, or even patients themselves, will come by, "Could Joe have an ice cream?" Well, with that request, I don't know Joe, *so I have to find out what kind of a diet he's on and then I have to go and find a nurse and ask her* [emphasis added], "Can he have this ice cream?" He might be on a calorie count, or he might be on intake and output. I wouldn't even [give] him a cup of coffee. That's another request through the family. He might really want an ice cream and he might not be able to have an ice cream yet.

Answering Multiple Demands

A major secretarial function is to process orders and requests from many people:

> Right now, the unit that I'm on has thirty-nine patients [in serious condition]. And it's just me. . . . I guess my greatest concern is that I get everything done. . . . With the amount of services that we have on our unit, it's not like other units where they have just a few. We have many services. [Each] service has a lot of doctors, and there are all those doctors coming in. [We have a certain number of] nurses on. We have one orthopedic aide. There are two social workers. There's a [rehabilitation] department. They have a PT—physical therapist. They have the occupational therapist. *They're all at the desk, and they're all grabbing charts* [emphasis added]. We also have the residents who are also coming through there. So, *you have all these people at the desk and everybody is talking to me. They don't wait. They look at you, tell you what they need to tell you, and then move on* [emphasis added]. You know you have one ear, so you listen to what they're saying and prioritize what you're going to remember.

The overarching constraint is "time." One secretary summed up the demands of her coworkers: "Everything has to be done now." She went on to say,

> Then you have nurses *where everything is urgent* [emphasis added]. "Could you do this?" "Please do that." It's as if *they think of you as some private secretary* [emphasis added]. Sometimes that's really hard because some of the requests are really things they could do themselves.

Maintaining a Calm Environment

Unit secretaries are expected to "not lose their cool" and to keep others from doing so by maintaining a placid atmosphere. One secretary described her space as "sort of the center of the unit. If it's an uncomfortable place to be, that's not good." Another said, "*If*

things go wrong at my desk, they go wrong for everybody else [emphasis added]. I have to make sure that everything is right where I am. They depend on me to know everything and mark everything that . . . is going on everywhere."

Another interviewee provided an example of actively trying to influence the mood of the unit:

> Maybe a nurse will be having trouble, and I know she's going down the tubes. She's overwhelmed and she doesn't want to call for help, but *things are going on and I know they're going on. I'll call the charge nurse and tell her that so-and-so's really having a bad day and her patients are unhappy* [emphasis added]. They're calling me. We need to do something—either dig her out or do something.

Making Decisions

As a matter of routine, the unit secretary's processing of orders and several other tasks are checked by a nurse, but at times, the secretary is given information on the basis of which she makes an important decision:

> The other day we had twelve patients coming in. We had four beds. Obviously, we could not take all the patients. It really wasn't my job. *I didn't have the authority to say [which we could take and which we could] not take. I had to ask the charge nurse which ones to take* [emphasis added]. So, she gave me what her views were. Admitting called again and said, "We have a patient for you and it's not one of the patients you know about. It's somebody else." Then she gave me the details. Well, *there I was again making a decision that I didn't feel like I needed to make. So I called the charge nurse and we talked things over again* [emphasis added]. . . . One of the people that were coming in was a prisoner. The doctor had called and said, "You know we're sending a prisoner. I don't want to. I thought a lot about it, and I know you guys don't like to take them, but he's not dangerous. He has a guard with him."

Learning the Assigned Tasks

The assigned tasks were the secretaries' most obvious duties, but analysis of the work and its meanings for secretaries revealed that hand-in-hand with these work assignments came the obligation to learn how to do them—learn them for the first time while becoming accustomed to the job, learn more efficient ways of doing them as one became more experienced and took on more responsibility, learn new ways of doing them as procedures and other variables changed. Learning the job was not only a *major* duty of the job, a responsibility that one necessarily undertook in order to be able to perform at all;

it also was a *continual* challenge, not ceasing when one began to feel comfortable in the role of unit secretary, but remaining on even the most experienced secretaries' lists of concerns.

Learning from a More Experienced "Buddy" During the First Weeks of Employment

Immediately after being hired for the first time, most secretaries were assigned to a more experienced worker who helped them perform the work for a few days or weeks. (The length of these informal apprenticeships varied, for the informants were trained as unit secretaries in a number of different hospitals before coming to their present place of employment.) Many descriptions of learning when they still felt new at the job resembled the one below:

> When you first come on, [you are] trained with another secretary at the time. You more or less are buddies. [She tells you,] "Do this or do that." *You're told and shown, "This is how I do this, and you know, eventually, you'll work out your own little system* [emphasis added]." And you do. You work out what are shortcuts that get the jobs done in a timely fashion. You can look at the sheet that I did this morning and say, "That's a lot of stuff!" Sometimes it's just amazing—like wow! You did that?

In the entire body of data, the only reports of regular assistance for secretaries are the reports of an experienced colleague showing a novice what to do and watching her work during her first weeks on the job. None of the women described this period of assisted work in detail, although several said that it was useful. One represented the method of this initial training with a sentence: "Your buddy took you by the hand and didn't just throw you to the wolves."

Learning by "Trial And Error" While Becoming Accustomed to Operating Independently

After the informal training period with another worker, learning became a matter of endeavoring, on one's own initiative, to develop appropriate behaviors, attitudes, and concepts. Compared to their brief observations about learning when they were first hired, the secretaries' statements about this learning phase were long and intense. (Most of the passages quoted in this paper are from this period.)

For the most part, the secretaries "worked out their own little systems" during this period by watching, experimenting, questioning other employees, and occasionally looking up facts (e.g., medical terminology) in books. All the informants' statements about their

own learning corroborated the observation of one that "a lot of it comes with just learning as you experience it." Others expressed this as learning from "the school of hard knocks," "example," and "trial and error." A woman in her third year of unit secretarial work said that she had learned an important lesson—that is, that she could not "do everything"—by "continually failing before I realized that [failure] is okay because nobody can do [everything]."

The interviewees estimated that it took anywhere from a few weeks to a few months to feel that they could handle the job fairly well. One asserted, "To get real comfortable, *it was probably two or three months* [emphasis added]. Then by the time they started teaching me the computer things—that was a *new thing they threw in—it was probably [an additional] month to get used to that* [emphasis added]." Another individual described this middle phase of learning this way: "*I was able to function just fine* [emphasis added] job-wise for the first year as a unit secretary. But I've never stopped learning."

Continual Learning Throughout the Employment Period

As the passage above indicates, all the secretaries maintained that this continual learning remains a basic element of the job no matter how many years they have held it. Another worker who has been a unit secretary for twelve years explained that, for her, this learning "on the job" had occurred "over a period of years."

Some individuals, when they talked about continual learning, were referring to learning new procedures or tasks associated with hospital innovations—for example, a new computer system. For example, one said, "In the whole twenty years, I've never stopped learning something. It's amazing because there will always be *a test that I [am] not familiar with before . . . medication or something* [emphasis added]. . . ." Others referred to continual learning of a more profound kind—developing basic capabilities for handling not only the tasks, but also the more subtle expectations and "stress" that accompanied the job. A secretary with fourteen years of experience in a variety of hospital units talked about this kind of learning:

> I learn all the time. Boy, has this last year been a real learning experience for me! . . . I think as far as the politics and what I within my realm of abilities should do and should not be doing—I know that. [But] *I am always going to be learning new things. Some new factor will enter in* [emphasis added]. That's part of what was so stressful about this new implementation of this [innovation] is that new factors entered in that we were not familiar with. We were confronted with other departments that were obstructing our ability to move ahead here, and so these were all

> factors that were new that we did not anticipate, and so we had to learn what are we going to do about all of this, and I think now that all those things are slowly working themselves [out].

In this example one, "new factor" that "entered in" was the "other departments that were obstructing our ability to move ahead." The speaker claims that she learned how to handle this one and the others that were involved in this case but knows that such learning also will be part of future developments.

The Basic Capabilities Underlying the Tasks

As the last example suggests, learning, which plays such a highly significant role that the secretaries' work cannot be understood without exploring it, is most accurately construed as going beyond the skills involved in completing the assigned tasks. A major finding of the research is that learning underlying capabilities enables the secretaries to continue to develop these skills as the tasks change. They fervently expressed the need to develop such capabilities, seeing them as fundamental to the ability to do the kinds of work listed in the previous section (e.g., transcribing doctors' orders and detective work). Their words and behavior indicated that throughout their activities, they were continually challenged to develop such capabilities. Analysis revealed that these capabilities lie in four broad domains:

1. *Organizing the workload* – seeing a discrete task through to completion, setting priorities among many tasks, negotiating the work

2. *Relating to people* – understanding individuals' personalities, influencing the mood of the worksite, using and interpreting body language, recognizing power differentials, employing various communication styles and channels, seeking help and information, working in a team

3. *Learning the organization of the unit and the hospital* – understanding departmental functions, professional roles, medical services, authority structure, administrative procedures, and so on—and the ways these are related

4. *Developing a concept of self in relation to the work and the organization* – cultivating initiative, self-assertiveness, confidence, "knowing your place as a secretary"

EXPERIENCED SECRETARIES' REFLECTION-IN-ACTION ON THE ACTIVITY SYSTEM

The analyses in this section contribute to knowledge of learning on the job by illustrating how secretaries develop their capabilities by practicing reflection-in-action on the activity system. Examples of unit secretaries' learning and work are analyzed in terms of activity theory as diagrammed in Figure 1. In order to highlight the learning aspect of activity, the analyses are simplified in several ways. They describe limited aspects of the interaction of only a few of the components in one activity system during one short period of its history. In addition, they also ignore the multiple interlocking activity systems (e.g., unit subdivisions, hospital, secretarial profession, healthcare institutions, families, and governments) of which each unit member is a part. A more complete account of the secretaries' roles within these systems would also pay attention to the many voices operating in each system, yielding insight into each individual as one agent whose activity is inextricable from that of others. (This last dimension of activity systems, multivoicedness, is employed in the analysis of the recently hired secretary's learning in a later section.)

Organizing the Workload

The Concept of Social Construction of Work

The unit secretaries who were the subject of this study participated in the construction of their work. Several, highly conscious of this role, maintained that active negotiations to determine their duties were a prominent, ongoing part of their jobs. All were involved in it to some extent. Berger and Luckmann (1966) have refined the concept that people socially construct their reality. In order to examine this aspect of the secretaries' work, the paragraphs below explore the concept of the social construction of work.

Variation in the Extent to Which Workers Can Influence the Nature of the Work To Be Performed

At first glance, a worker performing a task often appears to be doing work that is totally determined by the employer. For example, a casual observer of a woman hired to hold a flag signaling the presence of streetworkers might assume that she is reacting to directives without influencing them in any way. However, a worker always exercises some choice in the way he or she does a task, even if the choice is trivial—for example,

choosing a style of flag holding. In other occupations, the employee's choices may have a greater impact on the type of work performed. For example, a teacher might decide whether to spend a certain portion of time outside class in writing, reading, or working with students.

Variation in the Ways in Which Workers Collaborate To Determine the Nature of Their Work

The individual's role in determining the nature of work is influenced by and enacted through a social process. As people work, they participate in groups that collectively create jobs and their meanings. In some instances, workers can easily be observed in the act of collaborating to establish and carry out their duties; in others, the process is not as obvious. All workers, however, engage in social interaction as they decide what to do and how to do it, for they are responding to messages they have received about the work at hand (from coworkers and employers) and about work in general (from members of the wider society) even when those who originated the messages or are affected by the response are not present. In this sense, the type of work and the means of performing it are continually formed by the group.

The analyses of social construction of work described below show ways that the secretaries interacted with other employees in order to affect either the expected procedures for doing discrete tasks, the ways to do larger segments of work, or the tasks that were assigned to them. The secretaries' activity systems are shown to be the context in which the construction of the job occurred. As they reflected on their roles in these activity systems and adapted their practice in accordance with their understandings, the secretaries not only contributed to changes in their jobs and the wider systems of which the jobs were a part but also learned about the activity systems, increasing their competence for future negotiations of the work and the other capabilities the job demands. A striking finding of the research is that this learning about the system itself was so important to their jobs that it was a major responsibility.

Social Construction of the Procedure for Completing a Discrete Task

Secretaries reported combining tradition and innovation to devise approaches for individual tasks. One task which looms large in the informants' accounts is the "detective work" (described above in "The Secretaries' Work") required for fulfilling some orders. This work is necessary, for example, when the secretary must inform herself about the

hospital organization in order to figure out where to send a particular order from a doctor. Judy talked about finding help or information to handle a such a task:

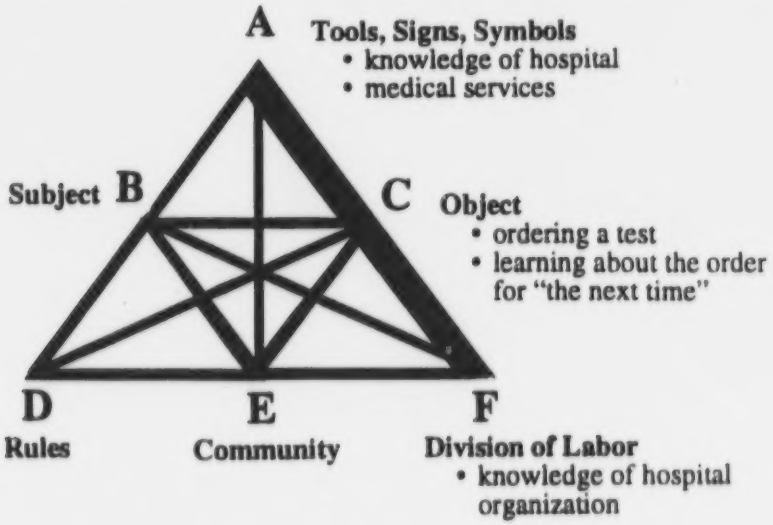
> If it's regarding a test that I'm not familiar with, I first contact the department that [I] would be ordering that from and ask for a suggestion. Now, let's say it's a lab test I am not familiar with. Would I know that it's on blood? So I'll call the lab. I usually can get a feel of what department it's from and what laboratory—whether it's from serology or hematology or chemistry and I can call into that department directly and say "The doctor has ordered this—does it go by some other name? Do we know it by some other name? I can't find it in the computer—can you help me?" Maybe it's a send-out and it's not even listed in the computer and I've never seen the test before. This really [is not a matter of] how much that you know off-hand but *who* you know to get the information. It is most helpful. If it's a piece of equipment that the doctor wants, then it's just, you know, a phone call to the proper person that would know what they want. Sometimes it may involve several phone calls. I try to take care of it here in the hospital instead of having to back to the doctor and ask. I have had to go back to the doctor and ask, "What did you—? I'm sorry I can't find this test. I'm not sure what it is. What was it that you were looking for?" And they will usually accommodate you. *All of that is then a learning process to help you learn the next time you have to do it* [emphasis added]. . . .

By "I usually can get a feel of what department it's from and what laboratory," Judy meant that she could extend her existing knowledge of medical terminology and departmental functions by first reflecting on how it might apply to a new situation and next experimenting with phone calls. Figure 2 shows how she learned whether her application was correct and, thus, increased her knowledge for future orders. This knowledge can be seen as a secretarial "tool" (A) because it mediated her relationship to her object, passing on the order. The phone calls she made utilized her knowledge of the division of labor in the hospital (F), for she referred not to an unstructured community of hospital employees who shared the general object of having orders sent to appropriate departments, but to individuals designated (by the positions they held) to work with her in specific ways. Thus, Judy applied her knowledge about medical services (A) and the division of labor (F) in the hospital not only to complete the task of ordering a test with which she was not familiar but also to improve her future performance.

Judy explicitly recognized this dual object of completing the task and learning about hospital organization. As she expressed it: "All of that is then a learning process to help you learn the next time that you have to do it again." Thus, Judy, as an active subject of the activity system, articulated clearly the simultaneity of working and learning the work which we found to characterize the secretaries' work in general.

Figure 2

Social Construction of the Procedure for Completing a Discrete Task (Judy)



Judy's awareness of learning as a basic element of her work was linked to a consciousness of strategies for increasing the learning. Asked by the interviewer, "How did you learn who to go to in the hospital?" she replied,

> Just through the years—it's a lot of phone calls. *It's also, I would say, paying attention to detail. Having an inquisitive mind—saying, "How does this get done?" and asking questions* [emphasis added]. . . . If somebody has a moment, you can ask them lab things [so] that they can then inform you. It can really take a lot of question asking—and your wanting to do it, wanting to increase your knowledge on how something is done.

She went on to claim that beyond using a variety of learning strategies (e.g., "attention to detail," "a lot of question asking," and "an inquisitive mind"), she approaches learning systematically:

> *If you have a procedure* . . . I ask the RNs a lot of questions sometimes—if I'm unfamiliar with a type of [procedure]. To give you an example, we only [began to do a certain procedure] close to four years ago. And I was totally unfamiliar with [this procedure]. And when they say they have a [certain kind of x-ray], I didn't have any idea what that involves. So I ask questions and then increase my knowledge of when a doctor writes for an order to be done I know what it is that he is looking for. I can sometimes anticipate maybe something that someone might need to do sometime. And I can have it ready for them instead of always—. Sometimes they are busy; they sometimes forget that they might need a certain piece of equipment for this or for that and they'll forget to ask for it, and *I can anticipate someone's need by learning more about what I am doing and what is involved. It may*

> *not be exactly pertaining to my job. . . . The more knowledge that I can obtain that is just in general—that is what the unit is about. . . . We are services that we provide. The more that I can help the people that I am there to help*— [emphasis added].

Judy apparently initiated this reflection in practice herself. As in all the other accounts of on-the-job learning of the activity system collected in this research, there is little evidence of a colearner, master, or mentor. While several informants praised unit secretaries who had been assigned to help them learn their jobs during their first few weeks, they never mentioned these individuals when talking about learning the ropes of the activity system in the ongoing attempt to improve their basic capacities.

Judy's practice, in addition to being an individual developmental process, was a social developmental process. She appeared to be aware of the link between her own and her group's development, for immediately after talking about her own learning (in the three passages above), she gave an example of using her own knowledge to develop that of another person:

> To give you an example, there are times when a doctor writes something that is incorrect and that then I have to [say to the doctor], "This is not the way we do it" or "This is incorrect"—such as, they might order a chest x-ray to check the feeding tube placement of a patient. That's not right. That's not how we do it here at this hospital. We order a flat abdomen x-ray to check feeding tube placement. *And so there I am actually saying to whoever ordered it, "This is not what we order; this is what we order"* [emphasis added].

In sharing her knowledge, Judy intended to affect others' input into the activity system. She hoped that the doctor who learned hospital procedures from her was likely to reduce her future workload by placing the order correctly. (Several secretaries mentioned the chore of translating when doctors requested tests by the names used for them in other hospitals and teaching the doctors the names used in the secretaries' hospital.) Judy's acquisition of knowledge about the activity system thus became an influential factor affecting it.

Judy was representative of the secretaries studied in that she took advantage of the systemic nature of the work setting. She was able to apply and extend her knowledge of the tools mediating her relationship to her object (work) and of the hospital organization mediating the relationship of the community to that object. Also typical of the secretaries was the way her learning was the result of self-initiated reflection-in-action. A significant

finding of the research was that this learning entailed knowledge of the activity system itself and in turn became a driving force in the historical development of the activity system.

Social Construction of the Way of Doing Work

At times, unit secretaries have the discretion to alter a set of procedures for accomplishing a series of tasks that comprise a large part of their work. The excerpt below depicts Katherine interacting with several other people to create a new way of finding out how much to charge patients for supplies (e.g., bandages) used in their care and compute their total supply costs. Her awareness of components in the unit and hospital activity systems led her to change the ways she performed the work and, in her opinion, greatly increased the efficiency of the system for charging patients:

> [The previous unit secretary] showed me [how to do the job] as she was leaving the position. I changed it a lot. I had the service code numbers put on the pick-list so I could simply highlight them. The job has changed because items weren't numbered. . . . Entering all the charge codes cut the job time in half. . . . I was always a day or two days behind. . . . I had to do overtime. . . . [I am] a single mother, stressed out, working ten-hour days and weekends. . . . [My manager] had said you couldn't do this. The computer guy said, "Oh, sure," and we got it going. After I talked to the computer people, [the manager] said "fine, whatever." [Then the computer people] got together with her. . . . *You have to make your own organization* [emphasis added].

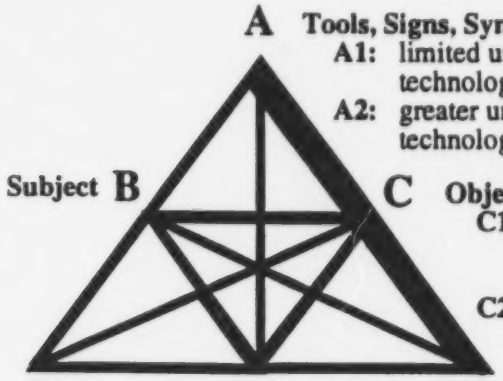
By "organization," Katherine meant establishing her own way of accomplishing a set task, in this case determining each patient's supply costs. We see from the account how she altered her actions for fulfilling this job in two ways. First, she had the numbers that are used to label hospital supplies printed on the pick-list so that she could simply highlight them with a marker (rather than look them up and write them in). Then she had a programmer enter into the computer database the prices corresponding to the supply names and code numbers. This way she could determine patients' costs by selecting the product on the screen and entering its cost with a few keystrokes.

According to Katherine, she took the sole initiative to renegotiate the procedure for determining charges. Yet she did not carry out the renegotiation by herself. By definition, "renegotiating" is a social process. In this process, she interacted with a peer (who contributed to Katherine's definition and understanding of duties before leaving them to her), the manager (who, based on Katherine's activity, changed her original opinion that the task could not be streamlined), and the members of the computer department.

Katherine's way of handling her dilemma (excessive work) can be understood only in the context of the entire activity system, represented in Figure 3. From her standpoint as an individual, the diagram represents the way she achieved her aim of changing the relationship between the subject (Katherine, B) and the object (her work, C). In altering the computer program and other procedures, she was developing the tools (A)—that is, the instruments "into which the historical relationship between subject and object thus far is condensed" (Kuutti & Arvonen, 1992). In Katherine's situation, the tools included her own and others' knowledge of the potential of computers and accounting systems. By consulting with her colleagues, she instigated a new division of labor (F) for mediating the relationships between the community of workers concerned with supply charges (E) and the object of their work (C).

Figure 3

Social Construction of the Way of Doing the Work (Katherine)



A Tools, Signs, Symbols
A1: limited understanding of computer technology by unit personnel
A2: greater understanding of computer technology by unit personnel

Object
C1: find numbers and names of supplies in books and enter them into computer
C2: highlight supply numbers on pick-list and select prices in computer

Division of Labor
F1: less time for other tasks
F1: more time for other tasks

From the standpoint of the group of hospital employees involved, Figure 3 represents Katherine's impact on the historical development of their entire activity system. First, Katherine reflected on the previous composition of the work object (C1) as described by the secretary who had held the position before. Employing her understanding of the tools available to her (A1), she acted on the division of labor (F1) because she wanted to create a way for the personnel to divide the labor of reconfiguring the work. One way she did this was to consult the manager. Then she ignored the manager's initial advice, thus creatively using the managers' prerogative, part of the division of labor, to give advice.

Another way Katherine acted on the division of labor was to appropriate the expertise (A1) of the computer programmer to solve the problem she had posed (thus recognizing and extending the type of work assigned to this individual).

The way Katherine was expected to go about her work (C2) was revised as a consequence of her competence in learning about and using her knowledge of the activity system. Then, she was required to highlight code numbers and find their costs in the computer program, actions that had not been part of her predecessor's procedures. These were not the only new tasks, however, for in originating the changes, she assumed the new task of conferring with the manager and computer experts in the first place.

As in any system, by definition, the effects of Katherine's activities on one component (changing C1 to C2) led to further effects in other parts of the system. It is likely that revising her approach to the work affected the division of labor (F2) because she became more available to help others. Observations revealed that after this reconfiguration Katherine was the secretary in the unit area who had time to put aside the task of computing charges to help another secretary who was behind in a different task.

As the division of labor evolved, the tools (A2) did too. In terms of technology, the employees changed the printed pick-list and computer program which Katherine used. Their knowledge also increased. For example, the manager had a greater understanding of the potential of computer technology.

Social Construction of Tasks Assigned to Workers

In addition to coconstructing their procedures for accomplishing discrete tasks and their ways of approaching regularly assigned work, some secretaries had a strong role in determining which work was assigned to them in the first place. In enacting this role, Denise resembled researchers and practitioners who explicitly adopt activity theory to analyze work and invent new models for it (Engestrom, 1991). She came across as such an analyst and practitioner by investigating the activity system in order to design and implement her desired innovation—a job assignment with her preferred tasks, schedule, and coworkers:

> I've spent about five years manipulating and trying to get to the point where I am. I'm real happy with things now. You asked me just a minute ago who sets priorities: I do. I run things by [the manager]. I get what needs to be done done, but my temperament is that I couldn't stand to have somebody with a checklist standing over me, so I don't. I just can't, and

> like I say, it has been a long haul; *it's taken a couple of years to get my schedule the way I want it, get my duties, learn all the other peoples' personalities and know which ones I want to work with and which ones I don't* [emphasis added].

Thus, Denise maintained that she consciously and carefully "manipulated" the system in order to achieve the work she wanted. In her description of the strategies she used to manipulate the system, it was striking that she simultaneously developed and applied these strategies:

> *I learned early on that . . . the more you did, the more you were expected to do* [emphasis added]. That if you went to volunteer for an additional project or did something [for] somebody to try and make their life easier that it was an expectation, and the next time something needed to be done, guess who? . . . *And I played along for about a year* [emphasis added] . . . by doing extra and then *I thought, "No, this isn't going to work* [emphasis added]." So I went back a little. I let other people take the slack up and started to pick and choose . . . the areas, the people, the projects, the things that I wanted to do because there you have to work very closely and it's a very intense environment. And there are some personalities that I would really rather not associate with. . . . *By doing the things I wanted to do extremely well* [emphasis added] . . . like [one of my current assignments]. I like to do that, . . . so I do it very, very well. I've been told by people that sometimes floors in different departments call down and compliment our director on how [well a certain assignment is carried out in this unit]. I wanted to do that. I wanted to be at work when my children were at school and be home when they're home and so that was mostly matters of kharma or luck more than manipulation. [A position] came open. It was a [full-time position] at that point and knowing that there [were] budget reductions there was some concern about things that I had volunteered to, [I applied for it]. . . . There's one particular person who I consider to be very intelligent but extremely short-sighted, almost impossible to reason with, and I wanted no interaction from her whatsoever because I knew this was one person that I would get angry with. This was the person who pushed the buttons in me and really didn't mean to push. And so, I found there was one [way to influence my assignment to work with her]: *I didn't do [certain tasks that she works on] quick enough and let someone else do them quicker* [emphasis added]. Let somebody else do them better. I didn't purposefully sabotage because I couldn't—I have a work ethic that would be horrible doing that. Again other people worked closely with her and I pulled back and after about six months it was decided that those two people would be the ones working with her and I wouldn't work with her at all.

The passage illustrates the interplay between Denise's reflection on and practice in the activity system, as depicted in Figure 4. To emphasize the codevelopment of her understanding of the activity system and her actions within it, they are schematized below:

- *Reflection:* As Denise "played along . . . by doing extra" she noticed that "the more you did, the more you were expected to do" (reflection on C in the diagram).

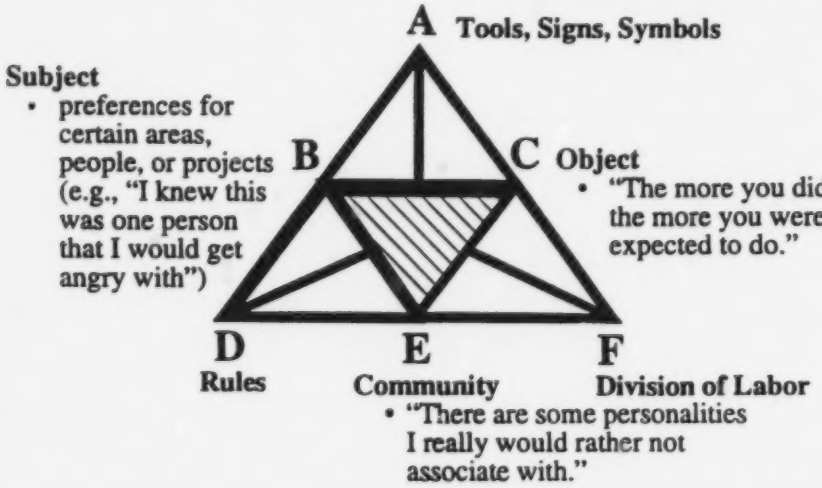
- *Action*: She reported, "I went back a little" and "let other people take the slack up" (action on C).

- *Reflection:* While performing her job, Denise had acquired knowledge about the social setting (reflection on E) to form a concept of her preferred work situation (reflection on B).

- *Action:* On the basis of this knowledge, she behaved in a way that she thought would allow her to "pick and choose" her schedule, duties, and work partners (action on E). In the process, she acted in a way that led her to develop a concept of herself as an able strategist who was willing to reduce her accomplishments but not "sabotage" the work in order to get the assignments she wanted (action on B).

Figure 4

Social Construction of Tasks Assigned to Workers (Denise)


A Tools, Signs, Symbols
Subject
• preferences for certain areas, people, or projects (e.g., "I knew this was one person that I would get angry with")
B
C Object
• "The more you did, the more you were expected to do."
D Rules
E Community
• "There are some personalities I really would rather not associate with."
F Division of Labor

Denise voiced satisfaction with her role as it resulted from the enterprise described, and we can see that her success was based on her understanding of the activity system and ways to operate within it. She grasped the qualities of the community (E) that she considered relevant to the work object (C). For example, she perceived that individual community members were "intelligent" and "short-sited" and that they came to expect more work from her when she did "extra." Taking into account this assessment of the

community, Denise defined herself as a subject (B) who could "pick and choose" her object (C).

Denise's efforts to change her workload (like Katherine's) were self-initiated, but their consequences reached throughout the unit, as interviews and observations among other unit employees indicated. Changes in Denise's workload affected the work of each member. Each person of this community renegotiated her work partly in response to the renegotiation of other members' work.

Although the renegotiation in Denise's retrospective account may seem relatively complete, it was one episode in the history of successive cycles of reorganization and learning that comprise an activity system (Engestrom, 1991). The secretaries adjusted their work as personnel were hired and left, acquired new skills (e.g., computer expertise), and formed alliances. Their actions were systemically related not only to the actions of others within the unit but also to the actions of members in other systems in which they were engaged. For example, they continually adapted the hospital's services to the rapid change which characterizes healthcare delivery systems.

The examples and discussion of secretaries constructing work indicated that individuals actively pursued the establishment of their objects. A major factor in this pursuit was their learning the activity system; through this learning, they were able to direct certain changes in the system.

Relating to People

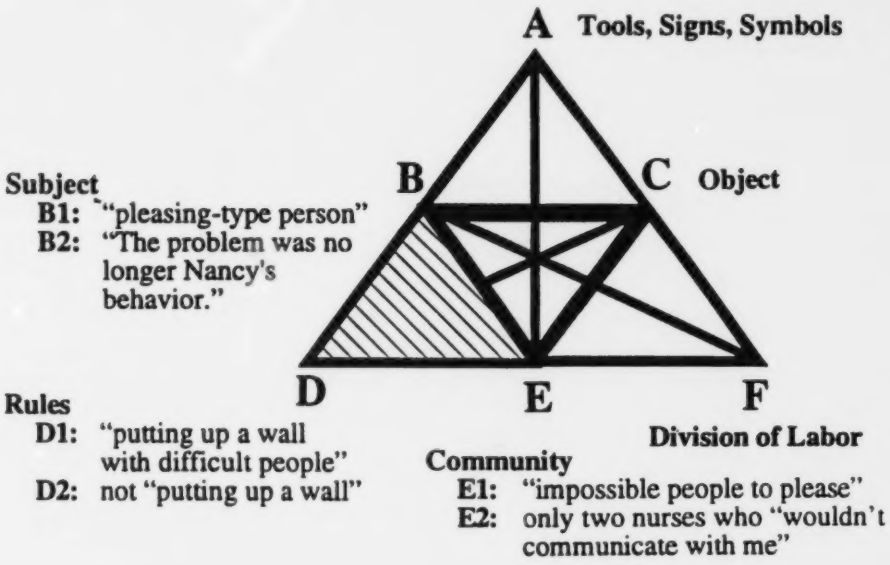
One approach to relating to other employees that all the informants reported was that of forming concepts of individuals' personalities as a basis for decisions about interacting with them. When asked about "times when you've had difficulty with other people," Nancy responded, "There's just some people that you don't get along with." Then she analyzed the reason that she does not get along with individuals of a certain type (in her own typology) and the way her relationships with them tend to develop:

> I'm a pleasing-type person. It was kind of my role in my family, so basically the people I wouldn't get along with [at work] were the people that I couldn't please. No matter what I would do, I couldn't prove myself to them. If I had a bad day, it's like they wouldn't forgive [me] for the bad day. *They were consistently looking for error. They were just impossible people to please. I would put up a wall with these people and my*

> *communication would break down* [emphasis added]. Even after I'd worked on that, there were a couple of nurses that just wouldn't communicate with me, basically. I felt like it was out of my hands at that point and that *they* had a problem.

Figure 5 represents the process by which Nancy developed her ability to relate to people as part of the development of the whole activity system. In her analysis, the cause of her reaction to people who "were consistently looking for error" was her tendency to try to please people. This assessment of her own qualities was her conceptualization of the subject (B1) of the activity system at that time. Similarly, she assessed the community (E1), finding certain members "impossible people." She observed a self-imposed rule (D1) for mediating her relationships to these individuals. The rule was to "put up a wall with impossible people."

Figure 5
Relating to People (Nancy)



Based on this reflection on the subject, community, and rules of the activity system, Nancy decided to "work on" her own reactions by trying a new rule (D2)—not "putting up a wall." After trying this approach for mediating her relationship to the community, she continued to reflect on her actions and their effects. As a result of her experiment with the new rule, the community changed (E2): Only a couple of nurses still would not

communicate with her. Apparently Nancy believed that their response was a holdover to her earlier rule (D1). Rather than alter her rule a second time, Nancy reformed her practice by honing her self concept (B2) in relation to the two nurses and her estimation of them (E2). She concluded that *she* (the subject of the activity system) had no problem with the two nurses' lack of communication, but *they* (members of the community) did.

The example has shown how Nancy's conscious reflection on her role in the activity system prompted her to refine her practice, evaluate its effects, and then consider and react to these effects. This is the way the secretaries generally formed ideas about and tried out styles of behavior with other individuals. Nancy's development of capability in dealing with personalities was part of the larger endeavor to purposefully define and achieve her object (create and succeed in meaningful work) by actively engaging in the activity system.

Learning the Organization of the Unit and Hospital

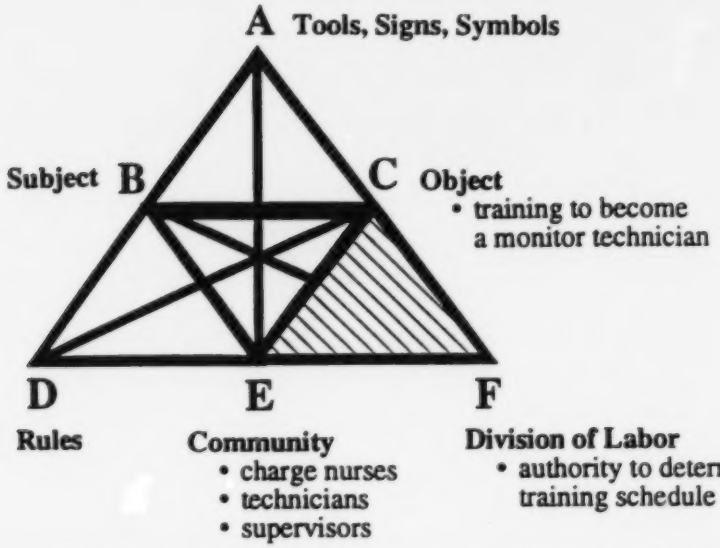
One dimension of experience that the hospital organizes is authority. In the following incident, Nancy learned about the authority structure in order to use it to fulfill her training goals:

> *I guess the supervisor [sets the priorities in my work] to a point* [emphasis added]. The charge nurse . . . will decide if she wants me to make coffee before I do the chart orders, you know. . . . Otherwise it's the supervisor [who sets priorities in matters like my] being trained to be a monitor tech. . . . The girls, the monitor techs, have been tutoring me. The charge nurses weren't going to let me stay over just to be tutored by these people. I finally asked our supervisor if that was okay and she said, "Oh that's fine, you can do that, but charge it differently on the timesheet." Basically, it was okay, so it came from the supervisor.

In this excerpt, Nancy's reflection on her interaction reveals that while she transacted the business about her training schedule, she also learned about the activity system in general. All components of the activity system were involved in the incident; but her account, diagrammed in Figure 6, emphasized the insight she gained into the way the *division of the labor* of making decisions (F) mediated the relationship between the *community* of charge nurses, monitor technicians/tutors, and the supervisor (E) and her *work* (C).

Figure 6

Learning the Organization of the Unit and Hospital (Nancy)



Through reflecting and exploring avenues for permission to get training, Nancy arrived at an analysis of the division of (decision making) labor: The charge nurses had the authority to ask her to make coffee, and the supervisor had the authority to approve her training schedule.

The multivoicedness of the unit with regard to this incident are evident: The charge nurses assessed their own role in making decisions differently than did the supervisor. Nancy needed to learn about these voices before she could resolve the problem.

By her own initiative in figuring out and moving the system, she accomplished her object of changing her work assignment to include the training sessions. (Participation in such sessions were a condition of her employment.) Although the data does not include observations of the outcome of this incident, the change in Nancy's work and knowledge about the unit activity system had the potential to affect tools available (e.g., her expertise in monitoring), rules (e.g., use of timesheets in the future), and all other components of the system.

Margaret, in the passage below, discussed her learning about a different segment of the authority structure—her own authority:

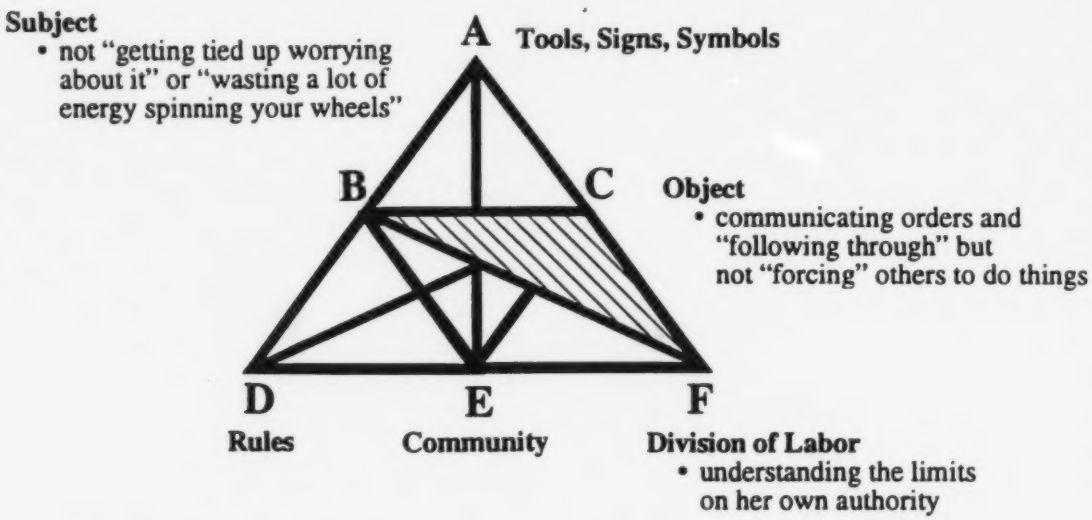
> As a secretary, you can't delegate really. I mean you can to a certain point, but you can't make a nurse do something. You can't force a doctor to

return a phone call. Getting tied up in worrying about it isn't going to help matters. You can follow through on it and you can make sure everybody knows and you can communicate but you can't force it to happen. You can waste a lot of energy spinning your wheels.

As Figure 7 suggests, Margaret's acknowledgment of the division of labor (F), specifically the limits on her own authority, mediated the relationship between the subject (B) and her object (C). She took these limits into account by forming a subject whose self-concept in the job context was characterized by not "getting tied up in worrying about it" and wasting energy "spinning your wheels." Similarly, she recognized these limits by defining her object as "communicating" but not as "forcing" others to do things.

Figure 7

Learning the Organization of the Unit and Hospital (Margaret)



This account and other material from Margaret suggested that she was adept at knowing and using the activity system. Her adeptness, and that of Nancy in the preceding example, were grounded in an outlook toward the activity system that in some ways resembled formal research on it. The interplay between their practice and their theories about the work settings were carefully thought out. They took care to perceive events around them as data, think about their significance, make generalizations about them, and base their actions on their findings. Several secretaries expressed pride that this careful learning process was a valuable contribution to the systems about which they were learning.

Forming a Concept of Self in Relation to the Work and the Organization

When the secretaries spoke about the purposes of their work in terms of activity theory, they were speaking about the meanings that the subjects (B) invested in their objects (C). In articulating their personal stances (B) toward their work (C), each individual emphasized different challenges.

Denise's challenge was to be a productive secretary while maintaining her self-esteem in an occupation she considered to be low status. She believed that she was able to do both because she is relatively detached from the job and its stress. This belief was accompanied by a complex analysis of her detachment. She felt that the detachment proceeds from the fact that she does not have to hold the job (she left homemaking because it bored her) and could readily take up another occupation. Freedom to choose occupations as well as involvement in her family at home mean that her deepest "ego" is not touched by the relationships on the job. This makes it easy for her to "know my place as a secretary."

Thus, Denise creates distance between herself as a subject in the activity system and the object of her labor by defining herself as having other potential objects (in other occupations) and belonging to a significant activity system outside the hospital (her family). This construction of herself as a subject facilitates her relationship to the work community, allowing her to accept her status. In her analysis, this acceptance enables her to work effectively.

Several interviewees declared emphatically that developing a concept of self (B) as "a strong person" had been a major challenge that they had to meet in order to "survive" in the job. They considered this development to be an essential strategy for effective work. Some of the reasons they cited for this need to be "strong" were

- *Overwhelming stress* –Their stressors include conflicting demands, the urgent nature of most medical work, fast-paced change, work overload, and anguish over illness and death that are associated with the object (C).
- *Strong personalities of others* – Several generalized that doctors, nurses, and/or members of other professional categories were extremely assertive, forming a community (E) with which work can be difficult.

- *Responsibility for the mood of the unit* – The hospital job description expresses this: "Promotes positive working relationships both within the department and throughout the hospital." The secretaries who were studied found this responsibility (C) for the community (E) daunting.

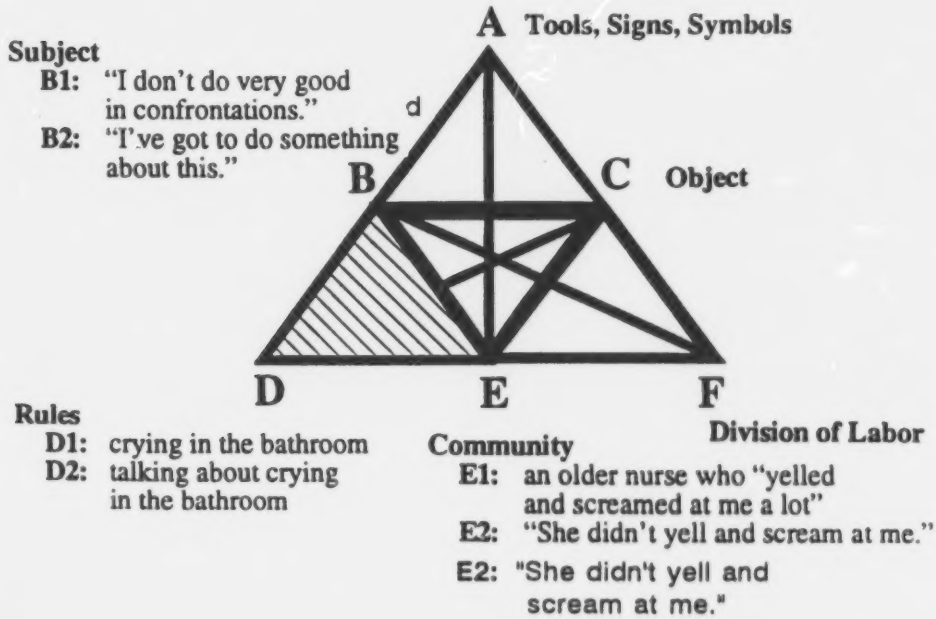
Most of those interviewed became especially animated in recounting a dramatic episode early in their careers during which they had created such a concept of themselves as strong subjects in the unit activity system by directly confronting a difficult coworker. This aspect of developing self-concept overlaps with the capability of relating to other people. Yet, to the secretaries, these episodes signified more than the acquisition of interpersonal skills: They led to a theory about what type of personality the job requires and constituted a major step toward forming it. In the passage below, Elnora, the day-shift unit secretary on a hospital ward, articulated her reflection-in-action as she developed her concept of self in relation to one superior's behavior:

> *An older nurse on my first job in another hospital yelled and screamed at me a lot* [emphasis added]. I'd go into the bathroom and cry my heart out. [I thought] "I can't deal with this any more. I really like my job, but I don't know if I can look this lady in the face any more without going into tears. I feel like I'm dying every single day." Finally, I said "I've got to do something about this." *I don't do very good in confrontations* [emphasis added]. I finally went up to her and I said, "Do you know that every night I go into the bathroom and I sit and cry because you yell and scream at me?" Then after that, things kind of were okay between us. She didn't yell and scream at me. She's really a good nurse. I learned a lot from her.

Figure 8 depicts some ways in which two components of the activity system developed in reaction to Elnora's adaptation of the rules. In deciding to talk to the nurse, Elnora was experimenting with an unspoken rule (D1) that mediated her relationship with a community member (E1), the older nurse characterized as "yelling and screaming." Elnora's original implicit code of behavior was that, under the circumstances, she could cry in the bathroom (D1). This code was in line with her original concept of herself as a subject (B1) who was not "good at confrontations." Elnora's sense that she soon would not be able to "look this lady in the face without going into tears" can be seen as her prediction of a disturbance in the activity system (in the relationship between herself as the subject and the nurse as a community member). To prevent this disturbance, she introduced into the activity system an alteration in the subject (B2), one who behaved differently in order to be able to look her superior in the face—and a new rule (D2)—telling the nurse that she was crying and why.

Figure 8

Forming a Concept of Self in Relation to the Work and Organization (Elnora)


A Tools, Signs, Symbols
Subject
B1: "I don't do very good in confrontations."
B2: "I've got to do something about this."
d
B
C Object
D
E
F
Rules
D1: crying in the bathroom
D2: talking about crying in the bathroom
Community
E1: an older nurse who "yelled and screamed at me a lot"
E2: "She didn't yell and scream at me."
E2: "She didn't yell and scream at me."
Division of Labor

In this example, we see again how the individual's learning cannot be isolated from the activity system, for her activity is social and therefore contributes to a collective learning phenomenon. The unit's development in this episode is one incident in its continual historical development.

Perhaps the most touching aspect of this account is Elnora's apparent feeling of isolation while she experienced the nurse's unkindness and hid how upset she was. On her own initiative, she decided to stand up for herself and did so. Although it is possible that Elnora neglected to mention other actors who were involved, there is a large number of similar accounts in the data. In them, the secretaries rarely mentioned collective action on or consideration of the issues they agonized over when they were less experienced.

Although deciding on her own to take action, Elnora was not actually operating alone in the activity system. On the contrary, her relationship to her objects on the job were highly interdependent with the objects of other community members. The point is that it was largely her own responsibility to learn about the activity system while she did her work, with no arrangements earmarked expressly to support that learning.

In general, the secretaries interviewed recognized the *social nature of their work* and *the individual initiative required for learning it* that the analysis of Elnora's issue with the older nurse clarifies. The metaphors that they used to describe their work—hub, filter, sponge, and others—highlighted their positions in the center of unit social networks. Similarly, their references to "teamwork" revealed their view of their functions as contributing to a group process. Yet their intentional theme in the histories of learning to become "strong" was that these learning experiences *had* to be lonely and difficult in order for growth to emerge from them. They did not talk about their learning being supported by or occurring in groups. Although everyone interviewed agreed that learning the ropes was a basic part of the job, no one reported that it had been a planned topic in any workplace event. Sarah offered a description of this individualistic approach to learning: "Over a period of years *[you] learn how to find the help you need to learn* [emphasis added] the different personalities and who to go to for help on each shift . . . [you learn] how to solve problems yourself." This secretary was typical of the others in seeing the induction period as the time in which she learned, by individual effort, how to "find the help you need to learn" about the hospital activity systems.

The accounts of becoming "strong" in the decision to confront a person who was perceived to be treating an individual unfairly include explanations of the criteria for such decisions. For example, Margaret advocated "letting it [a difficult situation or mistake someone has made] ride if there's a personality conflict." Nancy explained that she bases her decision on her analysis of the personality type with which she is interacting. She said, "I finally decided" that "I couldn't argue with" an individual who "was just very demanding and seemed to be needling in the little things" because the individual was "just one of those people that is continually asking for things." Instead of arguing, Nancy decided to accept the person's aggravating behavior and befriend her (by going out to lunch with her).

The basic principles of activity theory as applied to the excerpts above illuminate the essential nature of secretaries' learning. We see evidence that the unit secretaries, in developing the four capabilities, established a complex feedback system between reflection and action. In this process, they

- *concurrently* did *the work of renegotiation and* learned how *to do it* – We have no evidence that the secretaries first acquired the capability and then applied it. Their accounts of the events are themselves evidence that they

perceived the events as a learning achievement, not merely successful applications of knowledge that they had already acquired.

- self-initiated *reflection and action* – For example, the hospital did not *plan* to provide any support for the secretaries' renegotiation of their work. Neither did any of the secretaries report any prearranged guidance for learning the ropes (i.e., the activity system and how to operate within it) in the hospitals where they had first learned to be unit secretaries. In the sense that the hospital structures allowed such learning to occur, it did support it, but not with an explicit intention to do so. Neither was there any plan to review the learning that resulted from the newly established work dimensions or guide the organizational change stemming from it.

- *reflected* on *and acted* in *the activity system itself, rather than merely doing and learning one type of task (e.g., sending diet orders)* – The knowledge that the secretaries gained of the activity system was essential to doing their job.

- contributed to the historical development *of the activity system through their learning about it* – Each unit member's behavior within the system changed its parameters. This truth extends to learning behavior. As the secretaries learned about the activity system, they had an impact on it.

- *reached* resolutions *that* increased their active, positive participation *in their unit activity systems* and enabled them to continue learning about the systems – By successfully arranging training, learning who could help them in the future, ameliorating problems in getting along with certain individuals, accepting responsibility for the mood of the unit, teaching other workers hospital procedures, cooperating with members of other departments, and joining ranks with like-minded coworkers, they laid the groundwork for participation in staff teams. Their participation was either increased or more acceptable to them than it had been before they effected the changes.

Having offered a view of the ways the experienced workers approached learning and work, the paper now shifts focus to look at the induction period of unit secretarial work as one in which the novice has little support in learning the activity system.

A NOVICE'S REFLECTION-IN-ACTION ON THE ACTIVITY SYSTEM

Anne, a secretary with no previous experience in hospital work, was hired several months before the research was undertaken. At the time of the research, she was grappling to comprehend and fulfill her role in unit teamwork. The object of analysis in this section is her reflection-in-action on the activity system as a means of developing the four basic capabilities.

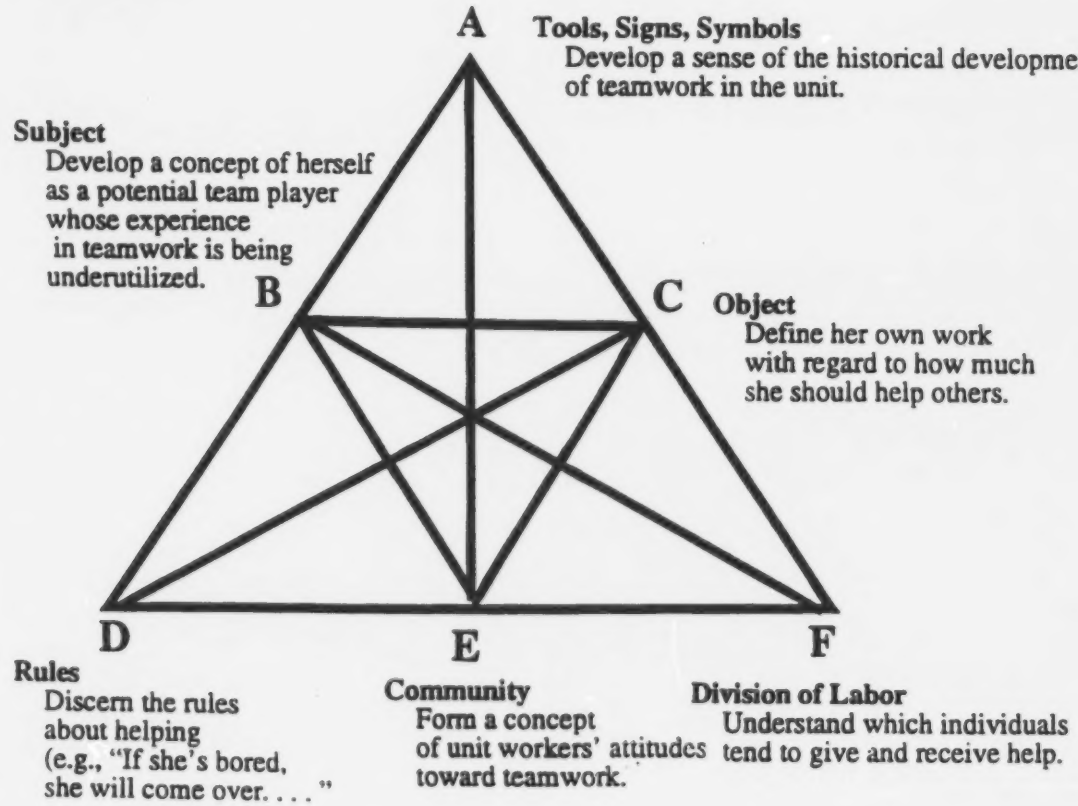
Unlike the experienced secretaries who were able to look back across the years to the transition to a new job, Anne was currently undergoing the transition. The activity theoretical analysis, expanded in this section to take into account all the components of her unit's activity system, reveals that she resembled the others in learning largely on her own initiative. However, because of her position as a novice with only an incipient understanding of the system, she resolved the issue of teamwork based on a view of the system that was limited, especially in its perspective on the tools that the other secretaries had developed to mediate their relationships to the object of their work. Therefore, her resolution of the issue contrasted with the resolutions reached by the veteran secretaries described in this section and the section above: Dissatisfied with her role in the unit team, she retreated from unit interaction and from learning about it.

For Anne, as for the more experienced secretaries, development of the fundamental capabilities that underpin unit secretarial performance was not explicitly planned by the organization. Responsibility for this broad development rested largely on Anne's shoulders (although other personnel taught her how to do specific tasks).

The lens of activity theory, as presented in Figure 9, elucidates Anne's faltering steps to conceptualize and manipulate the unit community (E), its division of labor (F), and the ways in which these components framed her own object (C). In doing so, she also demonstrated some capacity to codevelop her concepts and conduct with regard to the rules (D) and subject (B). But Anne's command of one tool (A), the historically developed understanding of the social construction of work in the unit, was markedly tenuous. Being a new unit member meant that she had not participated in and did not even know about her coworkers' earlier interpretations and negotiations of their work.

Figure 9

A Novice's Learning of Reflection-in-Action in the Activity System


In resolving the issue of teamwork, Anne needs to . . .
A
Tools, Signs, Symbols
Develop a sense of the historical development of teamwork in the unit.
Subject
Develop a concept of herself as a potential team player whose experience in teamwork is being underutilized.
B
C
Object
Define her own work with regard to how much she should help others.
D
E
F
Rules
Discern the rules about helping (e.g., "If she's bored, she will come over. . . . "
Community
Form a concept of unit workers' attitudes toward teamwork.
Division of Labor
Understand which individuals tend to give and receive help.

The Object

Anne was learning how to form an understanding of her tasks (C)—their sequence, deadlines, priorities, and place in the hospital workflow. She described her understanding of one task and the way it fit into the collective work object:

> *Then I take all the records from the day prior, put them in order, and check [them]* [emphasis added]. . . . There are times when nurses forget to turn them in and they're sitting in . . . a box, so I have to make sure I have them all. . . . *I've got to get those records done* so they can get to [another secretary] to be [completed]. I believe it's the...department [that needs them]. They want so much [information] put in [per] day, so *those have to*

> *be done. If they're not done then they call and say, "Why haven't you this amount of [information]?"* [emphasis added]

As the analysis of Judy's work in the previous section demonstrates, part of the unit secretarial job is to continually learn the job. Anne reported that she had received training from her predecessor: "They sat me down with lab records in front of me, and she watched me and showed me how to do it." However, she credited her learning to "trial and error." She described how she acquired the ability to do one task as she was accomplishing it: "I'm still learning. There's lots of new things that come through, and I look at [the medical care provided], then I look at the body part and, "Okay, this is what [the medical care provided] was," you know. That's *trial and error* [emphasis added]. . . ."

The Community and Division of Labor

Anne optimistically approached the task of learning to keep the records: "It's not something that you can't catch on to if you're willing to stick it out." But she was less optimistic about learning how to work with her colleagues. She struggled to understand and adapt to the qualities and attitudes of the community (E) that mediated their relationships as subjects in the system toward her role in teamwork (C). She also strived to figure out how their division of labor (F), especially when they were helping each other and thereby renegotiating the formal work assignments, mediated the community's relationship to its object of hospital work.

Such understandings were vital to the development of capabilities basic to her work. As a result of team experience in another job, she saw herself as a team player; she recalled that this quality was listed on the job description. Yet her efforts at giving and receiving help seemed to go nowhere. She described how she helps another worker:

> I go over and I see how far [another secretary's] got on the charges. She puts in the [information that goes to another department]. Data entry. I go over and most of the time I'll take a couple of batches that she's gotten ready and help her input until that day's done. . . . *I guess I just kind of added that on* [emphasis added] because she would get behind, then I would have all this stuff done that she couldn't take because she's behind.

When asked if Katherine expressed appreciation for her help, Anne replied:

> Oh no. No. If she's bored, she will come over and she'll say, "Do you have a . . . report? I'd like to update." I'll say, "Uh, thank you, I

> appreciate all the help because every single one helps, you know." *I'm not really sure why she does that* [emphasis added]. She just started doing that last week. . . . I've had that [appreciation] at every one of my jobs. . . . They've always in some way showed you that they appreciated what you'd done. For some reason, they [people in this job] don't. . . . *I think that comes from it's not team-oriented, even if they would like to say it's team-oriented* [emphasis added]. And when they hire, they say that they want a team player.

Anne repeatedly pondered the constellation of relationships among her community, their division of labor, and their work. She told about one coworker who was an exception to the description above in that she had "gotten really good about helping me," then quickly qualified this statement: "They don't always help when asked. [It's only when] they feel like they want to."

Anne's conclusion: "Unless somebody is bored, and unless somebody wants to [help me] and they can see you have a problem, *they're not going to offer unless they want to* [emphasis added]."

The Rules

In fitting into her new work environment, Anne can be seen as attempting to learn the explicit and implicit rules (D) mediating community behavior toward the subject (B). According to the accounts below, she consciously tried to figure out the implicit rules for accomplishing her assigned tasks, even bemoaning the fact that they were not taught in school:

> The main concern I have is to make sure that the procedures are being pulled right because like I said, there are exceptions to the rules. . . . There's a lot of [exceptions] right now because we just got a new [computer] system about a month ago. They entered brand new procedures. They aren't the same ones that were in our old system, you know. One thing could mean another. *That's something you can't learn in school. You learn when you start to work in [this unit]* [emphasis added].

She also regretted that these rules were not written:

> There's no set rule [about how to enter data on the computer]. *There is not a book you can look in* [emphasis added] and say, "Okay—if it's this procedure, they don't really want us to pull this, they want us to pull that." There's all types of rules like that, but *there's nothing that you can look at that will tell you how to do your job* [emphasis added]. . . .

When the tacit codes of conduct at issue concerned human relations rather than assigned tasks, Anne strove to discern them from her coworkers' behavior. For instance, when a coworker reported her mistakes to a supervisor, Anne inferred, "*They let you know what you're doing wrong, but they don't let you know what you're doing right* [emphasis added]. . . . It's like they want your mistakes written in black and white." From other events, she concluded that "in [this unit] it's fend for yourself." She came to believe that her coworkers "don't want to learn more because then they'll be asked to do more," so they "lay low." Based on this kind of inference, Anne formed a theory that individualism was the operating mode in the unit.

The Subject

As she formed her interpretation that the unit went by a "fend for yourself" rule, Anne tried to construct a complementary concept of the kind of person she needed to become (B) there. This was a rudimentary attempt to develop the ability to practice reflection-in-action. Anne asserted, "*I think you have to have a pretty strong personality and not let the people get to you* [emphasis added] to be able to be happy [in this unit]." Apparently, Anne felt that she developed some of the requisite strength by changing one of her character traits: "I take things really personal. *In the last few months I've really learned to not take things personally. More and more I'm getting to where I don't want to help out other people* [emphasis added]. You know, just like sit and do my job and if they're behind, that's too bad." Anne's growth in "strength" was accompanied by a retreat from her stance as a team player. A coworker who protected her own time by being highly selective in granting others' requests for help became Anne's model; Anne followed this woman's example by similarly redefining her own work as an individual endeavor (C). She reported that she decided to focus on maximizing her efficiency at individual tasks and resolved not to let critical people get the best of her. She found this decision to be at odds with both her own "team player" orientation and the organization's stated expectation of her. By responding to that portion of others' reflection and action which she could perceive and grasp, Anne engaged in the social construction of her work (C). But a consequence of her reflection on interaction with others was a self-protective concept of her relationship to the work (B).

The Tools

Thus far, the analysis depicts Anne's struggle to develop the ability to perceive the components of the unit system and revise her actions to fit her perceptions. This was her own struggle. Neither the organization nor individual employees explicitly planned training or discussion related to it. Her efforts focused on five of the activity system components—object (C), community (E), division of labor (F), rules (D), and subject (B). Now, we widen the angle of view on Anne's learning to encompass her reflecting and acting on the final component of the system, tools (A).

Although the data establishes that Anne was acquiring some of the tools necessary for mediating her relationship to the work (e.g., computer skills and record keeping), she seems to have been less adept at acquiring another tool, namely a grasp of unit members' historically developed understandings of the work. Such understandings are "tools" in the sense that they facilitate one's participation in an activity system because they are the means of accomplishing the actors' objects and result from the accomplishment. Community members react to and alter this body of knowledge as they forge new understandings and actions. For example, in Anne's unit, the members held shared and individualized understandings of how their work had been socially constructed. They also had an understanding of teamwork specific to their unit that had evolved through the process of negotiation and interpretation of the activity system.

Anne gave no evidence of knowing that their sense of history existed. Neither did she seek to know how her colleagues actually had forged the definitions of work, implicit rules, concepts of self, and so on—major factors in the unit environment. Although she did not recognize the fact, they too had experienced and consequently affected the activity system through the process of reflection-in-action and had individual and shared understandings of that particular history that Anne lacked.

The multivoicedness of the unit's history was part of the challenge entailed in becoming a contributing member of it. To illustrate some of the historically developed understandings to which Anne was not privy, we describe below several unit members' views of the process of constructing their work. Contrasting Anne's understanding of the teamwork issue as expressed in the passages above with remarks by four other secretaries in her unit—Denise, Frances, Linda, and Katherine—provides a view of this multivoicedness.

Denise

As described earlier under "Social Construction of Tasks Assigned to Workers," Denise managed to use her knowledge of the activity system to fashion a job that she enjoyed. In doing this, she applied her insights into the community (E) as a kind of resource that needed to be developed in terms of its division of labor (F) for mediating relationships between the unit subjects (B) and their objects (C). Her efforts yielded a work assignment that she felt allowed her to make a solid contribution to the team.

Frances

Describing how she too had worked within the activity system to alter the object of her labor (C), Frances remarked,

> Working at [my main task] is really solitary work and *I've discovered over the years that is really what I'm best suited for* [emphasis added]. I know that people, when they first start out, they don't have that luxury to say, "I am best suited for solitary work. . . ." You know when you start out, you have to learn the [other tasks], you have to learn the ropes. You have to do that part before you can move on to something else.

Looking back, Frances congratulated herself for reconfiguring the work:

> I think it started with one day a month at the end of the month, and then pretty soon it was two days a month, [then] *my supervisor, gave me that extra time to just do that. . . . Then it just kind of evolved* [emphasis added]. . . . And I have been given a lot of freedom that the other people didn't have. I don't have the scrutiny that the other people have.

Frances, liking the solitary computer work (which Denise found unpleasant), crafted the new tool (A, computer skills) that she realized could mediate the relationship between herself as a subject in the system (B) and her object (C, her work assignment) in a way that would change her object along the lines she preferred. Her process of action-reflection-action was parallel to Denise's, though the goal, with regard to solitary work, is the reverse.

Linda

As a unit secretary whose work was affected by the division of labor (F) that Frances and Denise had engineered, Linda had a positive outlook on the unit's new work configuration. She presented herself as a subject (B) who understood and accepted her relationship to the object of her labor (C) and therefore was very open to teamwork. For example, she openly discussed with Frances some problems related to Frances' area of

expertise. Linda also affirmed the value of the community (E) for helping her do her work: "With Denise and Katherine, . . . you can just point blank ask them if they would do something for you . . . or ask them, "How do you do this?" or whatever it was. *It's a very friendly give and take* [emphasis added]. They don't ever ask of you anything more than they would give themselves. . . . It's a very fair type of a thing."

Katherine

An earlier section, "The Social Construction of the Way of Doing the Work," presents Katherine's history of streamlining a task by corralling the efforts of computer experts and the support of her manager. She was able to reconstruct her work because she comprehended the way the division of labor (F) mediated the relationship between her community (E) and their object (C) and based her cooperation upon this comprehension. In line with Linda's praise of her accommodating attitude, Katherine enjoyed her role in the unit collective. She described Anne's predecessor, Denise, and herself as forming "a triangle of a lot of help" in which they "picked each other's brains; everyone would give an opinion about a problem. We'd all search."

This multivoiced history of the work reconfiguration, a tool which Anne's coworkers used to facilitate their continued cooperation, was not available to Anne. Across time, the players had fashioned the contours of the job to suit themselves as Anne has not yet been able to do. This process constituted a sort of extended conversation that cultivated a partially shared consciousness of hospital activity systems. The unit's historical outlook was a tool for analyzing the present work configuration, rationales for it, and methods for changing it.

Anne, as any newcomer, could not have been *party* to that history; and given the press of unit business, it is unlikely that *knowing* the history in great detail would have been practical. Yet Anne's lack of *awareness* of the history was a gap in her knowledge of the activity system. Although she strove to make observations and experiments on other parts of the system, the history of the work reconfiguration eluded her. Consequently, Anne didn't know about the ways the experienced secretaries had established their roles through negotiation and interpretation within the activity system. Neither did she perceive the informal network that the more experienced secretaries had created to continually learn the ropes or the need for *her* to learn to negotiate her work.

The Resolution

So far in her employment at the hospital, Anne had arrived at markedly different understandings and consequent actions than had the other unit secretaries (both those described in this section and those in the previous section). In general, the more experienced secretaries, in developing their capability to organize the work, relate to coworkers, develop concepts of themselves as secretaries, and understand hospital organization, had *built a foundation for enhanced cooperation with other members of the unit.* Cases in point are Denise, Linda, and Katherine, who redefined their individual work and formed a "triangle of a lot of help." Even Frances, who decreased the extent of her team interaction by negotiating a solitary task, nevertheless seems to have improved its quality, for she became satisfied with her apparently stable role of contributing the work she did to the unit collective.

In contrast, Anne decided to retreat from close interaction over work. Although she did practice reflection-in-action, the gap in her command of the tools available to other unit members kept her from resolving the teamwork issue in a manner which laid the foundation for enhanced teamwork and instead *increased her separation from the group.*

The point is not that Anne received no assistance in learning any part of her job. On the contrary, she received instruction in her specific tasks in the first weeks of employment, found additional help from individuals as time wore on, and participated in hospital-sponsored workshops on secretarial skills. But *planned, explicit support for learning how to reflect in action on the activity system, the process that analysis reveals to be the foundation of learning the ropes, was not a regular part of the induction or any later employment period.* Anne's self-initiated reflection-in-action on the activity system led to an incipient command of the activity system that was not strong enough to encourage her team participation. Withdrawing from the challenge of teamwork put her at a disadvantage for developing the underlying capabilities. She was thrown back on her own resources for learning to organize her workload, relate to others, learn the hospital organization, and develop a concept of her self in relation to the work.

CONCLUSIONS

The study has examined the complex understandings and capabilities unit secretaries develop on the job as well as the various means by which they account for their learning. Analysis of the data gathered through interviews and observations of unit secretaries at one hospital leads to conclusions about the connections between learning and doing, the role of the activity system in the learning process, and the impact on the learner and on the activity system of unsupported learning experiences.

Learning and Doing

Learning the Job Is a Major Part of the Job

The hospital's written job description stipulates particular abilities as well as psychological and social attributes ("transcribes orders," "performs clerical duties," "maintains . . . attitude of service," and so on). Such a description implies that the worker will apply existing skills and knowledge in the hospital setting. However, the research revealed that in *learning* to perform these tasks effectively, the secretaries are indeed *doing* their jobs. Unit secretaries described learning how to set priorities, to engage in detective work to solve a problem or locate necessary information, and to deal with multiple demands as examples of job responsibilities. They had to acquire relevant knowledge while performing the very tasks requiring that knowledge within the specific hospital context.

Learning and Doing Are Concurrent; an Antecedent/Consequent Model of Training and Work Is Not Applicable to This Setting

Secretaries repeatedly stated that much of what they had learned to do in this job was not "taught in school." And while the majority acknowledged the value to their work of courses in medical terminology and medical secretarial work, they credited the bulk of their important learning about the job to "trial and error" or learning on the job. They also consistently spoke of the need they felt to continue learning in the job, for example, in response to changing technology in their workplace, personnel shifts, and procedural and organizational changes.

Learning the Ropes Entails Developing Four Capabilities That Underlie the Required Skills for Unit Secretaries

The concurrent learning and doing of the job of unit secretary involved

1. organizing the workload,
2. relating to people,
3. learning the organization of the unit and the hospital, and
4. developing a concept of self in relation to work and the organization.

The large array of tasks, skills, and competencies required of unit secretaries in a context of urgent medical care belies the notion that a simple listing of "duties and demands" (as written in the job description) fully represents their work. Developing these complex capabilities was the focus of the secretaries' efforts during their induction or "learning the ropes" phase. The interconnectedness of these capabilities has been shown, for example, as Denise negotiated the work by shaping the tasks to be more to her liking while at the same time reaffirming her self-concept in relation to the work as "knowing her place as a secretary."

Reflection-in-Action in the Activity System

A Large Part of Learning the Ropes Is Learning the Activity System

The secretaries discussed the importance to their job performance of being knowledgeable about components of the activity system: tools, subjects and objects of work, rules, community, and division of labor. Repeatedly, they spoke of the importance of having an inquisitive mind, of asking questions, and of learning whom to ask as important learning tools. The scope of the inquiry described was larger than the task at hand; the secretaries felt it important to acquire general knowledge about the unit's and hospital's operation. They were composing the big picture of the activity system as they operated within it. In developing the capabilities required of them, the secretaries constantly engaged in the life of the hospital or unit as an activity system. What they learned about any component—for example, procedures as rules—was largely dependent on the interaction between that component (rules) and, for example, the knowledge they had of unit members' (community) personalities as mediated by their own developing sense of self in relation to the work (subject). The learning was thus dynamic and interactive.

Learning in the Activity System Occurs Through a Process of Reflection-in-Action That Is Largely Self-Initiated

When secretaries described their learning process as one of "trial and error," they provided clear evidence of reflection on action. In this way, they explained how they arrived at understandings and decisions such as criteria for prioritizing work, approaches to use with various people in the workplace, methods for getting things done within the organization, and their stance toward the job and the institution. Two features of the process as described were especially striking: it was evidently recursive and generally self-initiated. Informants repeatedly traced a sequence of action taken, reflection on its effect, and revision or confirmation of the original plan (see diagrams in analysis section). In some instances, the reflection-in-action represented technical problem solving—for example, determining the correct way to enter a test or procedure on the computer database. But in a larger sense, the secretaries' determination to use evidence of response to their own actions to better shape future actions (e.g., in one area of the activity system), signaled an effort to improve their performance and increase their job satisfaction by constantly making use of available data on effects of their actions. This pattern of reflective practice ran as a theme, though not in so many words, through all the informants' descriptions of learning the ropes. It is worth noting that all of them described this process as one that began with them, not as one recommended or supported by hospital training or procedures. The secretaries took the responsibility to step back, assess an action taken or decision made, consider other ways to achieve the desired effect, and modify the original plan if their reflection so indicated. They describe self-initiated and self-monitored cycles of reflection-in-action.

A Unit Secretary Learning the Ropes Participates in the Ongoing Interpretation and Negotiation of the Activity System

Analysis of secretaries' functioning in various segments of the activity system pointed to the ongoing process of reflection-in-action and the resulting decisions or understandings. The secretaries simultaneously acted within and learned about the activity system. Furthermore, we can see how the secretaries learning the ropes have an impact on the activity system itself. As an example, one individual's negotiation with a coworker about accomplishing a task with complex operations resulted in shifts in the division of labor (F), new understandings about teamwork in the unit community (E), and focused attention to specific tasks in the process (C).

The analysis of Anne's learning makes the point that the extent and type of interpretation and negotiation of the activity site varies with participants' access to the history of the institution (A), their experience of community (E), their self-concept in relation to the work (B), and other factors. Anne's experience with and reflection on the activity system leads her to see it as "factory-like" and immutable. In contrast, some of Anne's coworkers perceive the activity system as much more responsive to their influence; hence, they actively negotiate it. Like reflection-in-action, this process of interpretation and negotiation within the activity system is ongoing.

Learning about Each Component of the Activity System Is a Driving Force in the Activity System Itself

When a secretary figured out a way to use the computer for a task previously done by hand, the task efficiency was increased with resulting influences on the division of labor and the object of her work. Another secretary's decision to tell a doctor the appropriate request for checking a feeding tube placement probably resulted in his adherence to this rule and less need for the secretary to engage in monitoring him as an object of her work. Even during the initial learning phase, secretaries' nascent understandings and abilities are part of the dynamic interaction of components of the activity system. Since their learning is both actively acquired and translated into action, the secretaries are at once learning about and acting upon the activity system. In this way, learning about any component contributes to the historical evolution of the activity system.

Supported and Unsupported Learning in the Activity System

Learners See Themselves As Constantly Engaged in Learning, but As Seldom Being Taught; However, in This Community Each Individual Is a Teacher and Each Is a Learner

Secretaries' descriptions of learning by trial and error usually implied or stated that secretaries learned on their own to solve problems, to work out their own system for accomplishing tasks, and to figure out how to approach others whose cooperation they needed to successfully do their jobs. While they had received instruction—for example, from a more experienced coworker—in discrete tasks or procedures, they credited their learning of the big picture to their own persistent inquiry. Still, shifting roles of teacher and learner were apparent across the study. Anne, the newest secretary, described how she was teaching a more experienced secretary how to help her with a time-consuming and

crucial job responsibility. "Never assume anything; ask questions" surfaced as a theme in the secretaries' accounts of ongoing learning in the job. Major understandings or ways of operating in the job resulted from their own analysis of problematic situations and consequent decision on action.

Unsupported Learning Is the Norm Here, Even Though There Is Much Assisted Performance

In the previous section, Anne's attempts to learn the activity system were contrasted with those of her colleagues, Denise, Frances, Linda, and Katherine. The contrasting resolutions they came to about teamwork resulted from the various experiences of and access to organizational history. Thus, because of their experience of positive impact on the system, the veteran unit secretaries retained a sense of collective purpose and commitment even while negotiating the job parameters to be more to their liking. Anne, however, withdrew from collaboration as she struggled to successfully complete her discrete tasks. Her colleagues' successful learning of the ropes was an individual process; so too is Anne's, but her newness makes the successful label premature. The point here is that, despite the frequent explanations of collaboration in the unit—the reciprocal help, for example—among unit secretary, nurses, aides, and even physicians, these unit secretaries described their learning as an individual, largely unsupported process. Initial instruction, usually of a week or two in duration, gave way to learning by trial and error, asking questions, and solving one's own problems. The research traces a rich and productive experience of reflective practice as the learning mode but must conclude that this learning occurs without formal support in a context that does require supported or collaborative practice.

IMPLICATIONS

The fact that learning and doing are inextricably linked in unit secretarial work makes the hospital work setting a fertile field for designing training. Across occupational fields, changes in the organization of work tasks and in technology are making workplaces more "learning intensive" (Bailey & Noyelle, 1988; Noyelle, 1987; Stern, Iguchi, Komazaki, 1992), and learning the job itself has been increasingly identified as a part of job duties critical to employee performance. The findings here indicate that learning the ropes, much more than an accretion of skills or procedural knowledge, is a matter of

coming to understand the work and its context as a continually developing system. Designs of learners' interactions across the continuum of school to workplace training develop this big picture knowledge by extending the learning that already exists within the activity system.

Recognize the Essential Role of Assisted Learning

The study of the unit secretaries' unsupported learning does not imply criticism of the institution; support for learning the ropes of the organization (as a basis for developing the capabilities underlying the work) is probably extremely uncommon in most work settings. In fact, the hospital's job description indicates its awareness of the complexity of the function that unit secretaries perform (see Appendix A), and it is clear that the experienced unit secretaries had devised ways to master the job in the hospitals where they had worked. However, their challenges in achieving this learning suggest the desirability of reducing the time and energy this learning takes, at the same time creating an environment that instills a professional attitude toward continual learning.

A basis for design of supported learning is available in Vygotsky's theory of the zone of proximal development (ZPD). The theory offers insight into the social nature of learning and points the way to structuring successful learning while doing. The ZPD is an area of performance in which a learner can function with assistance at a level not yet possible for her independently. The support is temporary but crucial to the eventual mastery of the learning task, much as the scaffolding of a building is necessary during construction but dispensable upon the building's completion.

Vygotsky forged his contribution to the understanding of learning as socially supported activity through his study of children's language acquisition. He analyzed the way the child constantly engages in dialogue with the language-proficient adult. The adult, by extending and responding to the child's utterances, "scaffolds" the learning of language forms, structures, and conversational "rules" as in the following example:

Child: "Dat Mommy cup."

Mother: "Yes, that's Mommy's cup. Mommy is drinking her coffee in the cup. What do you have in your cup?"

She carries the burden of the conversation and thus makes it possible for the child to acquire language by using it. In more general terms, she structures the interaction to allow the learner to do with help more than he could do alone.

While the theory of a ZPD emerged from Vygotsky's studies of language acquisition, Bruner (1986) has extended the notion of structures, or scaffolding, for assisted language learning (which are implicit in the concept of ZPD) to the acquisition of other kinds of knowledge. Indeed, there are strong parallels for adults learning complex systems where structure is provided within which to exercise nascent skills.

The concept of ZPD is useful for understanding the employment induction period because it highlights the interplay between individual development of the ability to learn the ropes and organizational support for that learning. In the case of the secretaries studied for this report, the process of learning the ropes was one of "trial-and-error." Although analysis revealed this process to be complex reflection-in-action on the activity system, it was largely self-initiated. The organization neither encouraged nor structured it.

The clear implication of this study is that institutions, viewing their new members as occupying this ZPD of learning the ropes (through reflection-in-action on the activity system), might profitably provide scaffolding. Identifying induction learning as occurring in a ZPD shifts the burden of learning from the individual to the social group—the unit, wider organization, support group, or others. An equally clear implication is that workers' enhanced competence in operating and learning the "ropes" affects the activity system itself, thus increasing overall organizational effectiveness as well as individual worker performance.

Create Conditions To Foster Assisted Learning

Contemporary researcher Brian Cambourne (1988), through his studies of language and literacy acquisition, illuminates the route to applying the idea of a ZPD to the design of worker education. Based on these studies, he proposes conditions for optimal assisted learning: *immersion, demonstration, expectation, responsibility, employment, approximation, and response*. An institution seeking to foster assisted learning needs to

- communicate to the new worker the *expectation* that he or she will learn the job. The worker can see evidence of this belief in his or her potential when

the setting incorporates resources that actively foster learning, including a supportive trainer, mentor, or other authority who can convey understanding of the social system and capabilities which underpin success.

- *immerse* the new worker in the life of the unit by having him or her perform authentic tasks and encouraging him or her to take an active role in the activity system.

- provide *demonstrations* by a skilled trainer/mentor who can model reflective practice, investigation of the activity system, and development of the basic capabilities underlying the more easily named and circumscribed skills required by the job.

- share *responsibility* for the learning climate and activities by trusting the new worker to make some decisions about content, sequence, and pace of learning activities on the job and by working with him or her to stimulate and reward learning efforts.

- structure opportunities for the new worker to *employ* incipient skills and develop proficiency through successive *approximations*. This presumes that knowledge develops gradually rather than that mistakes can be eradicated as a whole and replaced with correct forms.

- plan regular *response* to new workers' learning in order to promote reflection on his or her individual workplace interaction and the system in which it occurs.

Through actions along these lines an employer can build a scaffold for maximizing the learning that proceeds from an employee's regular work. These positive interventions in individual reflective practice can assist the learner in becoming confident in his or her ability to construct knowledge for personal uses, consequently to share and negotiate the result of these understandings, and thus to become a member of the "culture-creating community" (Bruner, 1986).

The kind of knowledge that workers acquire as they learn to do their jobs, and that support can extend and deepen, is not a simple skill. Training which capitalizes on the ZPD can lead to a vision of the organization as a place in which meanings are negotiated and understandings evolve, a stance that invites further thought and action on the part of

learner, experienced worker, teacher, and the organization as a whole. This kind of training is the opposite of the transmission model in which an expert delivers facts or knowledge for learners' uncritical consumption. The learner who is being supported in the ZPD participates in the ongoing interpretation and negotiation of the activity system. The learner creates knowledge as well as receives it.

Design and Implement Innovations That Structure Learning in the Workplace

Given the social nature of learning and of work, designs for training should structure work settings with this purpose in mind. While individual mastery of job responsibilities is important, acknowledging and fostering the social path to this end is also desirable. Therefore, it is appropriate to examine settings to discover how they support or hinder interaction that leads to learning.

As an example of this kind of examination and its implications for training, the unit secretaries' settings can be investigated in terms of the kind of support they provided for new secretaries learning to use the strategy of asking questions. They needed to develop this skill as part of a generally active stance that included other behaviors (e.g., avoiding assumptions and independently seeking information). To a certain extent, the setting supported learning the strategy of asking questions: An experienced secretary explained and oversaw the novice's tasks for several weeks and fielded her questions. However, the fact that the experienced helper retained her regular job responsibilities limited the number and kinds of questions she could answer. In this case, the setting works against active exploration fueled by questions since the secretary in training might shy away from asking questions if she felt she were taking valuable time from the organization. On the basis of this observation, workplace training could be redesigned. One possibility would be to provide support for the experienced secretary in her role as teacher, especially by reducing her regular responsibilities while the novice is first learning the ropes. Another valuable innovation might be seminars for pairs of secretaries in training and their trainer/mentors to discuss their perspectives on the workplace.

This focus on the setting shares with the emphasis on assisted learning in the previous implication a basis in the social/constructivist theory of learning. In the transmission view, the setting is important only as the location for the training. In contrast, a social/constructivist concept of education places interaction with others in a supportive

setting as an essential condition of learning. So focusing on the learning setting acknowledges the reciprocal learning and teaching in the activity system and the evolving nature of teamwork within that system.

Design of socially supported learning in the workplace also conforms to the reality of workers' widening sphere of social interaction to accomplish the job. Already, team organization is common within departments and organizations, and increasingly, workers are expected to participate effectively in more broadly constituted groups, for example, including managers and clients or customers.

The complexity of the interrelationship between workers' knowledge of their workplace and its support for that knowledge points reform efforts away from a narrow focus on individual development. By educating individuals to base their practice on a big picture of their context, an organization can promote not only individual learning but also development of the entire activity system. A direct approach to enabling employees to develop this big picture is to involve novice and experienced workers in designing work itself, taking into account their own learning needs and the needs of the organization. Potential ways to structure worker participation that teaches the ropes include teamwork on complex tasks that are open to interpretation, regular problem-solving sessions in which people with a range of experience share their views as they work out solutions, and collaboration between experts who assist novices in the process of learning how to apply their knowledge of the activity system.

Design and Implement Innovations That Structure Occupational Learning in Schools

Interests by business leaders in ways to best prepare employees to perform on the job and continue to learn on the job are converging with more general concerns about how to optimize learning for students. One cause for concern is that schools have traditionally separated vocational academic and education with the unintended implication that, in learning to do a job, thinking can be separated from doing. The conclusions of this study, by revealing the central role of workers' reflection-in-action on the system of which they are a part, indicate the need for students preparing for work to develop habits of reflective practice and interactive learning. Effective vocational preparation may be as much a matter

of learning particular thought and social processes as of learning particular content and skills.

The findings in this study are in line with other research-based conclusions on the need for designing occupational education, in school and in the workplace, with consistent content, processes, and settings. Resnick (1987) point to several important distinctions between learning in school and out-of-school settings that currently thwart such consistency, among them the expectation in schools that theoretical knowledge and skills will generalize across contexts while work focuses on applied situation-specific knowledge and skills. Stasz et al. (1990) assert that these inconsistencies point to the need for school preparation for work to emphasize learning abstract domain-specific theories and facts and using this knowledge to reason about real-life problems.

The research, including the present study, supports increased efforts to integrate school and workplace learning. Reform initiatives in this direction include cooperative education, youth apprenticeships, and internships that place students in extended placements in workplace settings. In addition to their potential benefit for the school-to-work transition, such programs also offer opportunities to develop assisted learning designs that promote an understanding of the social construction of learning in workplaces and the role of reflection-in-action as a learning strategy.

While numerous studies, as noted in the introduction, have suggested general skills workers need, none of these skill lists provide a blueprint for designing school curriculum in vocational education. Many of the skills are so general as to elude precise instructional designs for their development. More to the point, the lists themselves do not contribute to understanding how these skills are actually applied in their workplace settings. This study adds important data to the quest to identify workplace-relevant skills and to develop them in school by showing how skill use in work settings depends on socially constructed and shared meanings of tasks through reflection-in-action on the activity system.

In order to bring occupational instruction in schools into line with workplace realities, schools must pay attention to such recommendations on content and processes of instruction. An emphasis on assisted learning and reflection-in-action calls for a shift in pedagogy away from transmission of skills and toward mentorship and modeling of reflective practice. The implications for teacher education are to foster an understanding of the social and constructive nature of learning and of work and to help teachers become

proficient in strategies that build on interaction and reflection in practice. With new understandings of the social/constructivist nature of learning, many schools are already assessing their instructional settings to see if they support interactive learning and critical thinking based on the ongoing negotiation of meanings, which have been shown to be features of workplace life. Specific aspects of school settings that bear such examination include the degree and kinds of (1) individual risk-taking versus collaborative support for learning, (2) opportunities for students to learn in a variety of ways and determine their most productive learning modes, (3) students' familiarity with group and teacher expectations, and (4) student input into task assignment and evaluation standards.

In addition to looking at the appropriateness of academic programs for enabling students to learn how to adapt to jobs, a broader look at the relationships between academic and vocational learning is called for. It is especially important to look at the impact on the learner of the learning contexts. In this vein and bearing in mind that socially shared performance is the workplace norm, the important questions are about the social organization of classrooms and workshops: Are the learning tasks occurring in authentic social groupings (i.e., does the social organization fit the object of the work)? Does the task elicit collaboration, reflection-in-action, and/or a growing awareness of the activity system? Learning experiences that help students to value and refine their reflection-in-action as well as their interactive learning with others are important preparations for learning the ropes of a job.

If learning and work are viewed as a continuum, then training, whether it occurs in school, in a cooperative program, or in the workplace, must structure social and intellectual processes consistent with the requirements of comprehending the complexities of real-world jobs. To do this, learners need to be engaged in experiences that have real meaning to their organization, be it school or the workplace.

REFERENCES

Bailey, T., & Noyelle, T. (1988). *New technology and skill formation: Issues and hypotheses* (Technical Paper No. 1). New York, NY: National Center on Education and Employment, Teachers College, Columbia University.

Berger, P. L., & Luckmann, T. (1966). *The social construction of reality: A treatise in the sociology of knowledge*. Garden City, NY: Anchor Books.

Berryman, S. E. (1987). *Shadows in the wings: The next educational reform* (Occasional Paper No. 1). New York, NY: National Center on Education and Employment, Teachers College, Columbia University.

Bruner, J. (1986). *Actual minds, possible worlds*. Cambridge, MA: Harvard University Press.

Cambourne, B. (1988). *The whole story: Natural learning and the acquisition of literacy in the classroom*. New York, NY: Ashton Scholastic.

Cazden, C. B. (1983). Can ethnographic research go beyond the status quo? *Anthropology and Education Quarterly, 14*(1), 33-41.

Cazden, C. B., John, V. P., & Hymes, D. (Eds.) (1972). *Functions of language in the classroom*. New York, NY: Teachers College Press.

Collins, A., Brown, J. S., & Newman, S. (1989). Cognitive apprenticeship: Teaching the craft of reading, writing, and mathematics. In L. B. Resnick (Ed.), *Knowing, learning, and instruction: Essays in honor of Robert Glaser* (pp. 453-494). Hillsdale, NJ: Lawrence Erlbaum Associates.

Commission on the Skills of the American Workforce. (1990). *America's choice: High skills or low wages!* Rochester, NY: National Center on Education and the Economy.

D'Andrade, R. G. (1981). The cultural part of cognition. *Cognitive Science, 5*(2), 179-195.

Engestrom, Y. (1991). Developmental work research: A paradigm in practice. *Quarterly Newsletter of the Laboratory of Comparative Human Cognition, 13*(4), 79-80.

Engestrom, Y. (1992). *Interactive expertise: Studies in distributed working intelligence* (Research Bulletin 83). Helsinki, Finland: University of Helsinki, Department of Education.

Fingeret, A. (1983a). Common sense and book learning: Culture clash? *Lifelong Learning: The Adult Years, 6*(8), 22-24.

Fingeret, A. (1983b). Social network: A new perspective on independence and illiterate adults. *Adult Education Quarterly, 33*(3), 133-146.

Fingeret, H. A. (1991). Meaning, experience and literacy. *Adult Basic Education, 1*(1), 4-11.

Geertz, C. (1977). *Interpretation of cultures*. New York, NY: Basic Books.

Gilmore, P. (1985). Gimme room: School resistance, attitude, and access to literacy. *Journal of Education, 167*(1), 111-128.

Gowen, S. (1990). *"Eyes on a different prize": A critical ethnography of a workplace literacy program* (University Microfilms International Order No. 9102992). Ann Arbor, MI: Dissertation Information Service, University Microfilms International.

Hart-Landsberg, S., & Reder, S. (1992). *Teamwork and literacy: Learning from a skills-poor position.* Portland, OR: Northwest Regional Educational Laboratory.

Heath, C., & Luff, P. (in press). Collaboration and control: The use and development of a multimedia environment on London underground. In Y. Engestrom & D. Middleton (Eds.), *Communities of practice: Cognition and communication at work*. Port Chester, NY: Cambridge University Press.

Heath, S. B. (1983). *Ways with words: Language, life, and work in communities and classrooms*. Port Chester, NY: Cambridge University Press.

Horsman, J. (1990). *Something in my mind besides the everyday: Women and literacy.* Toronto, Ontario: Women's Press.

Hutchins, E. (1987, June). *The ontogenesis of a quartermaster.* Paper presented at First International Workshop, Activity, Work, and Learning (sponsored by the Nordic Society for Educational Research), Narjaa, Finland.

Hutchins, E., & Klausen, T. (in press). Distributed cognition in an airline cockpit. In Y. Engestrom & D. Middleton (Eds.), *Communities of practice: Cognition and communication at work.* Port Chester, NY: Cambridge University Press.

Johnston, W. B., & Packer, A. H. (1987). *Workforce 2000: Work and workers for the 21st century.* Indianapolis, IN: Hudson Institute.

Kozulin, A. (1986). The concept of activity in Soviet psychology. *American Psychologist, 41*(3), 264-274.

Kuutti, K., & Arvonen, T. (1992). Identifying potential CSCW applications by means of activity theory concepts: A case study. In *CSCW'92: Sharing perspectives: Proceedings of the conference on computer-supported cooperative work* (October 31 to November 4, 1992, Toronto, Ontario) (pp. 233-240). Baltimore, MD: Association for Computing Machinery.

Laufer, E. A. (in press). Expert and novice differences in cognition and activity: A practical work activity. In Y. Engestrom & D. Middleton (Eds.), *Communities of practice: Cognition and communication at work.* Port Chester, NY: Cambridge University Press.

Lave, J. (1988). *Cognition in practice: Mind, mathematics and culture in everyday life.* Port Chester, NY: Cambridge University Press.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation.* Port Chester, NY: Cambridge University Press.

Leont'ev, A. N. (1978). *Activity, consciousness, and personality.* Englewood Cliffs, NJ: Prentice-Hall.

Leont'ev, A. N. (1981). *Problems in the development of mind.* Moscow, Russia: Progress.

McDermott, R. P. (1974). Achieving school failure: An anthropological approach to illiteracy and social stratification. In G. D. Spindler (Ed.), *Education and cultural process: Toward an anthropology of education* (pp. 82-118). New York, NY: Holt, Rinehart, and Winston.

Merriam, S. B. (1989). Contributions of qualitative research to adult education. *Adult Education Quarterly, 39*(3), 161-168.

Norros, L. (in press). System disturbances as spring-board for development of operators' experience. In Y. Engestrom & D. Middleton (Eds.), *Communities of practice: Cognition and communication at work.* Port Chester, NY: Cambridge University Press.

Noyelle, T. (1987). *Beyond industrial dualism: Market and job segmentation in the new economy.* Boulder, CO: Westview Press.

Ogbu, J. U. (1974). *The next generation: An ethnography of education in an urban neighborhood.* New York, NY: Academic Press.

Poirier, C. (1991). *Creativity at work: The social process of change.* Portland, OR: Northwest Regional Educational Laboratory.

Reason, J. (1990). *Human error.* Port Chester, NY: Cambridge University Press.

Reder, S. (1987). Comparative aspects of functional literacy development: Three ethnic American communities. In D. Wagner (Ed.), *The future of literacy in a changing world* (pp. 250-270). Oxford, England: Pergamon Press.

Reder, S., & Green, K. R. (1983). Contrasting patterns of literacy in an Alaska fishing village. *International Journal of the Sociology of Language, 42*(1), 9-39.

Reder, S., Hart-Landsberg, S., Schwab, R. G. (Jerry), & Wikelund, K. R. (1991). *Literacy development: Transitions, opportunities and participation*. Portland, OR: Northwest Regional Educational Laboratory.

Resnick, L. (1987). Learning in school and out. *Educational Researcher*, *16*(9), 13-20.

Rockhill, K. (1982). Researching participation in adult education: The potential for a qualitative perspective. *Adult Education Quarterly*, *33*(1), 3-19.

Rockhill, K. (1983). Motivation out of context: Research on participation in continuing education. *Mobius*, *3*(1), 23-27.

Schon, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York, NY: Basic Books.

Scribner, S. (1984). Studying work intelligence. In J. Lave & B. Rogoff (Eds.), *Everyday cognition: Its development in social context* (pp. 9-40). Cambridge, MA: Harvard University Press.

Scribner, S., & Sachs, P. (1990). *A study of on-the-job training* (Technical Paper No. 13). New York, NY: National Center on Education and Employment, Teachers College, Columbia University.

Scribner, S., & Sachs, P. (1991, February). *Knowledge acquisition at work* (Technical Paper No. 22, with L. DiBello and J. Kindred). New York, NY: Institute on Education and the Economy, Teachers College, Columbia University.

Secretary's Commission on Achieving Necessary Skills (SCANS). (1991). *What work requires of schools*. Washington, DC: U.S. Department of Labor.

SCANS. (1992). *Learning a living: A blueprint for high performance*. Washington, DC: U.S. Department of Labor.

Shaiken, H. (in press). Experience and the collective nature of skill. In Y. Engestrom & D. Middleton (Eds.), *Communities of practice: Cognition and communication at work*. Port Chester, NY: Cambridge University Press.

Spindler, G. D. (Ed.). (1974). *Education and cultural process: Toward an anthropology of education*. New York, NY: Holt, Rinehart, and Winston.

Spindler, G. D. (Ed.). (1982). *Doing the ethnography of schooling: Educational anthropology in action*. New York, NY: Holt, Rinehart, and Winston.

Spindler, G. D., & Spindler, L. (Eds.). (1987). *Interpretive ethnography of education: At home and abroad*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Stasz, C., McArthur, D., Lewis, M., & Ramsey, K. (1990). *Teaching and learning generic skills for the workplace* (MDS-066). Berkeley: National Center for Research in Vocational Education, University of California at Berkeley.

Stern, S., Iguchi, T., & Komazaki, H. (1992). *The development and expression of corporate creativity*. Tokyo, Japan: Tokyo Institute of Technologies.

Vygotsky, L. S. (1962). *Thought and language*. Cambridge, MA: Massachusetts Institute of Technology.

Vygotsky, L. S. (1978). *Mind in society*. Cambridge, MA: Harvard University Press.

Vygotsky, L. S. (1988). *Problems in general psychology. Volume 1: Thinking and speech*. New York, NY: Plenum Publishers.

Wertsch, J. V. (1981). *The concept of activity in Soviet psychology*. Armonk, NY: M. E. Sharpe.

Wertsch, J. V. (1985). *Vygotsky and the social formation of the mind*. Cambridge, MA: Harvard University Press.

Wikelund, K. R. (1990, November). *Literacy for everyone? What does that mean? The many meanings of literacy*. Paper presented at the American Anthropological Association Annual Meetings, New Orleans, Louisiana.

Winograd, T., & Flores, F. (1986). *Understanding computers and cognition: A new foundation for design*. Norwood, NJ: Ablex.

Wolcott, H. F. (1967). *A Kwakiutl village and school.* Case Studies in Education and Culture series. New York, NY: Holt, Rinehart, and Winston.

Wolcott, H. F. (1978). *The man in the principal's office: An ethnography.* Prospect Heights, IL: Waveland Press.

Wolcott, H. F. (1983). Adequate schools and inadequate education: The life history of a sneaky kid. *Anthropology and Education Quarterly*, *14*(1), 2-32.

Ziegahn, L. (1992). Learning, literacy, and participation: Sorting out priorities. *Adult Education Quarterly*, *43*(1), 30-50.

APPENDIX A

Hospital Job Description

HOSPITAL

JOB DESCRIPTION

JOB TITLE:	UNIT SECRETARY & MONITOR TECHNICIAN	**FLSA:**	NON-EXEMPT
REPORTS TO:	NURSE MANAGER	**DATE DEVELOPED:**	
DEPARTMENT:	_____	**DATE REVISED:**	

GENERAL SUMMARY:

Unit Secretary: Performs general clerical duties to support the unit. Transcribes physician orders in an accurate and timely manner. Demonstrates effective communications skills and coordinates public relations. Performs all duties in a manner which supports team concept, caring, and respect, reflecting the philosophy of the and the Upholds the standards of confidentiality, attendance, and punctuality.

Monitor Technician: Observes heart rhythms: identifies arrhythmias and conduction defects. Records and reports any abnormalities or significant changes to an R.N. and/or physician. Performs all duties in a manner which supports team concept, caring, and respect, reflecting the philosophy of the Upholds the standards of confidentiality, attendance, and punctuality.

REPORTING RELATIONSHIPS:

Reports to Nurse Manager
No direct supervisory responsibilities

EDUCATION/EXPERIENCE:

Unit Secretary:
- Satisfactory completion of unit secretary coursework or equivalent knowledge.
- Knowledge of nursing unit clinical duties.
- Medical terminology and computer skills.

Monitor Technician:
- Satisfactory completion of basic EKG or equivalent knowledge and experience

MENTAL DEMANDS:

Unit Secretary:

* 11. Transcribes physicians' orders in an accurate and timely manner.

* 12. Participates in QA/QI activities.

13. Maintains and utilizes supplies to minimize waste and overage.

* 14. Attends mandatory inservices.

15. Attends secretarial meetings and inservices per department policy; participates in staff orientation.

Monitor Technician:

* 16. Consistently observes and accurately identifies rhythms and dysrhythmias.

* 17. Records, posts, and reports changes to appropriate personnel.

* 18. Maintains competency with monitoring equipment.

MAJOR CHALLENGES:

- Effectively maintains a calm and caring demeanor in milieu of constant change.
- Accurately completes work in a timely manner with frequent interruptions.

SENSORY REQUIREMENTS	R	O	F	C	NA	Comments/RFCP
Talking in person				OX		
Talking on telephone			O	X		
Hearing in person				OX		Hear monitor alarms
Hearing on telephone			O	X		
Other sensory requirements						
Visual acuity				OX		Documentation skills;
						Reading (i.e. computer screens/
						orders)

ENVIRONMENTAL SETTING	Comments
Safety requirements (i.e. clothing, safety equipment required, activities performed)	Personal safety with office equipment/monitor equipment
Exposures (i.e fumes, chemicals, vibrations, humidity, cold, heat, dust, noise, blood & body fluids)	
Operation of equipment, tools, vehicles	Office equipment
Required hygiene standards (food handling, clean, contaminated, and sterile equipment, etc)	
Other environmental requirements:	

Department Head:_____ Date:_____

Administrative Review:_____ Date:_____

Personnel Review:_____ Date:_____

The above is intended to describe the general content of, and requirements for, the performance of this job. It is not to be construed as an exhaustive statement of duties, responsibilities, or requirements.

APPENDIX B

Interview Guide

INTERVIEW GUIDE: LEARNING THE ROPES

This is a *guideline questionnaire* for the interviewer. The interviewer will emphasize certain questions, as time permits.

Introduction: We want to know what your job entails, how you go about doing it, and how you learned or are learning it. We are seeking the real challenges, not always obvious, and ways you really handle them. Our interest is not so much the technical skills in which you were trained as the social organizational, and personal awareness (i.e., how to manage in a work setting) that is required to perform well on the job and ways you develop it. Please feel free to tell us about the know-how of other workers as well as your own know-how.

BACKGROUND—5 minutes

Please give a brief description of your *education* level: last grade completed and degrees, including secretarial training.

Briefly describe your previous *employment,* including employment history with this hospital. Give job titles and dates.

DESCRIPTION OF YOUR CURRENT JOB—10 minutes

Give your basic work schedule (times).

What are you *hired to do?* Give main tasks, duties, assignments, and responsibilities.

How do you go about doing it?

How did you learn how to function within this position (i.e., manage yourself and your tasks)?

What has been your greatest *challenge* in this job? What do you worry about in relation to performing your job?

STRATEGIES FOR GETTING ALONG WITH PEOPLE—10 minutes

Who organizes the work around here?

Who sets *priorities* for your work?

(Who *gives you work* to do?)

(Does anyone *reprimand* you or other employees?)

Do you ever have any problems with *conflicting priorities* being set for you?

Do you ever have any problems with unreasonable or *unrealistic amounts and kinds of work* being demanded from you.

Give examples of situations in which you have had to deal with *difficult people* (e.g., a coworker or superior). How did you handle it?

Have you been in a situation in which a coworker *annoyed* you continually? What did you do about it? Did other people get involved? With whom did you discuss this matter? What was the outcome of these events?

With which employees have you had *disagreements?* What were they about? What were the results?

STRATEGIES FOR GETTING INFORMATION AND HELP FROM OTHER PEOPLE—10 minutes

When you don't know how to handle a situation, whom do you go to for *help or information*? Is there an official procedure for getting help or information? If so, do you follow it? Describe any approaches you have devised on your own? Examples of areas you might seek help with include word processing, coffee break schedule, decisions about tasks, sick leave, whom to ask for help, hospital organization, and rights as a worker.

If you needed *advice* on a sensitive topic, whom would you ask? For example, perhaps you feel the question is "political" or something you should know already.

Which *communication channels* do you use with which people? In other words, to which individuals occupying which positions within the hospital do you communicate by means of memos, more formal writing (e.g., letters), notes (stickies or others), phone, spontaneous face-to-face conversation, scheduled meeting, e-mail, intercom, and any others that are available? Describe the occasions in which you use them.

Describe the differences in the ways you talk and act with people in various positions. For example, with one person you might adopt a formal *style* and with another you might behave more informally.

INDIVIDUAL SECRETARIES—5 minutes

(If there are only 20 minutes left in the interview, skip this section.)

Think of somebody who seems to be effective at managing the work, at getting their job done. Tell us what he or she does that "works."

For you and other secretaries you know about in this hospital, how do you know when you are doing a good job?

THE PROCESS OF LEARNING THE ROPES—20 minutes

Can you think of a funny (or perhaps not so funny) *story about "learning the ropes"*? Perhaps you or someone you know learned how an office "works" the hard way or you observed something that taught you the proper way to behave.

If you were going to help a recently hired secretary with learning the ropes, what would you do?

Looking back at the ways you learned to handle yourself as a secretary, identify models, demonstrations, mentors, helpers, informal ways you were trained that *paved the way* for you.

- in schools, colleges, secretarial training, and seminars
- on-the-job, here and in previous positions
- in other settings, including family

Now identify experiences that *made it difficult* to learn the ropes here:

- in schools, colleges, secretarial training, and seminars.
- on-the-job, here and in previous positions.
- in other settings, including family.

Looking back again, please describe any kinds of *learning assistance* that would have helped you in the early days in this job or your secretarial career.

What is it that experienced workers know that enables them to get along in the job better than newer people?

(For recently hired secretaries) What do you think you still need to know about the ropes here? How long do you think it will take for you to learn it?

(For experienced secretaries) Do you feel you know all the ropes? How long does it take to learn them?

When could you attend a focus group?